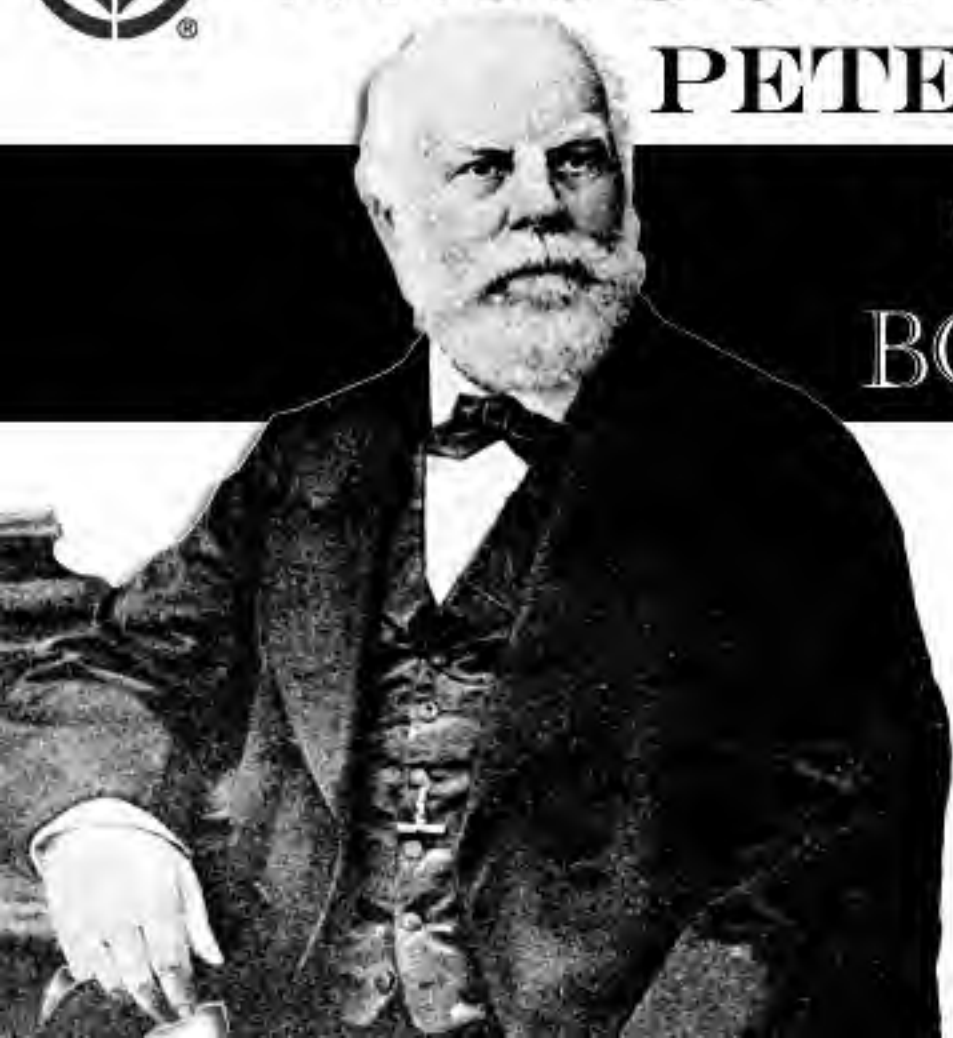




MISSOURI BOTANICAL GARDEN  
PETER H. RAVEN LIBRARY



GEORGE ENGELMANN  
BOTANICAL NOTEBOOKS

*Pagination Note:*

*Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.*

P. Lansa 621-6

government is brought before Congress, member after member of that distinguished body floods it and the country with sentimental effusions upon the sacred obligations of Indian treaties, and our duty to uphold and protect the Indians in all their rights. If those who use such arguments mean binding treaties, and *legal* or equitable rights, then I agree with them. But if they mean the right which the Indian claims, to steal everything he can lay his hands upon, and to murder and scalp western pioneers upon our borders, then I say they are wrong. But I deny that there is any treaty existing between the United States and any Indian tribe, within the territory of Oklahoma, which conflicts with the establishment, at once, and without the consent of the Indians, of a territorial government over it. The last treaties made, in 1866, with the principal tribes occupying it, expressly provide for such legislation over it as "Congress and the President of the United States may deem necessary."

The enemies of the organization of the territorial government, and who deny that Congress has the power claimed, rely upon the 5th article of the treaty between the United States and the Cherokee Indians, made in 1835, and which is in these words: "It is agreed that the lands ceded to the Cherokee Nation, in the foregoing article, shall, in no future time, without their consent, be included within the territorial limits or jurisdiction."

fol. 1 man write  
p. 1060 - 1075 am



0 1 2 3 4 5 6 7 8 9 10  
cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

on the part of Congress to invade the provisions of the treaty last referred to, expressly declares that the act of Congress and the treaty are in conflict, but, notwithstanding, the act is binding, and our revenue laws are in full force and operation throughout the territory. The case is reported in 11 Wallace. Not doubting the power of Congress to organize the territorial government suggested, and that without the violation of any treaty stipulation or moral principle, and believing that the interests and safety of our people, the claims of humanity and a just regard for the welfare of the Indians themselves, all demand it, I urge upon you the propriety of instructing our Senators and requesting our Representatives in Congress to support a bill for that purpose.

LOUISIANA AND STATE SOVEREIGNTY.

I can not allow myself to pass without notice, in this communication, the unsurpassed outrages committed so recently upon the rights of Louisiana as one of the sovereign States of the American Union, if not at the instance, at least by the consent, of the President of the United States. We have seen a district judge, without a shadow of authority, backed by Federal soldiers, hurling from office the duly elected servants of the people and substituting in their places the

11721



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

*Pinus densa* Chapm. - Herb

May 12 1875

*Apulachicola*



margin  
of leaf  
x 60

sect. of leaf x 30



margin  
x 30

x 2

leaves 2 - 3 1/2 inch long

1/2 line wide

sheath (old?) 2 1/2 inch long

(umbo)

scales 1/2 inch wide  
1/4 high

Cone sessile, depressed 1/4 inch diam. 3 1/2 inch long  
scales 21/32 order, with strong  
transverse ridges, stout sharp prickles  
horizontal or mostly a little bent upwards



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

**D. Schroeder,**

**PHARMACEUTIST,**

*No. 3005 Olive Street,*

Near Garrison Avenue,

**ST. LOUIS, MO.**

No.

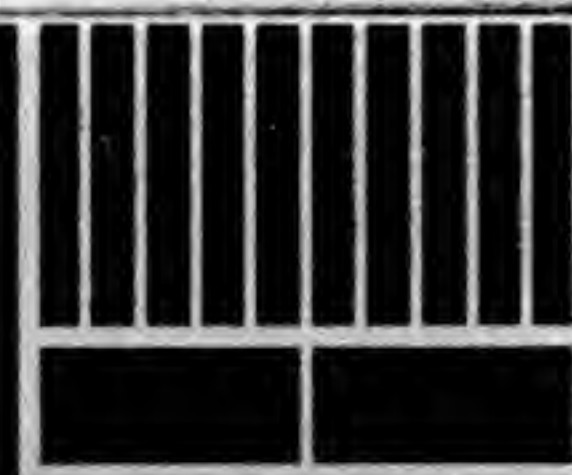
Date,

187

*R*

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11722



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

*Pinus inops* var *clausa*

May 19 1875

Chapman in herbar

Apalachicola

AW Chapman

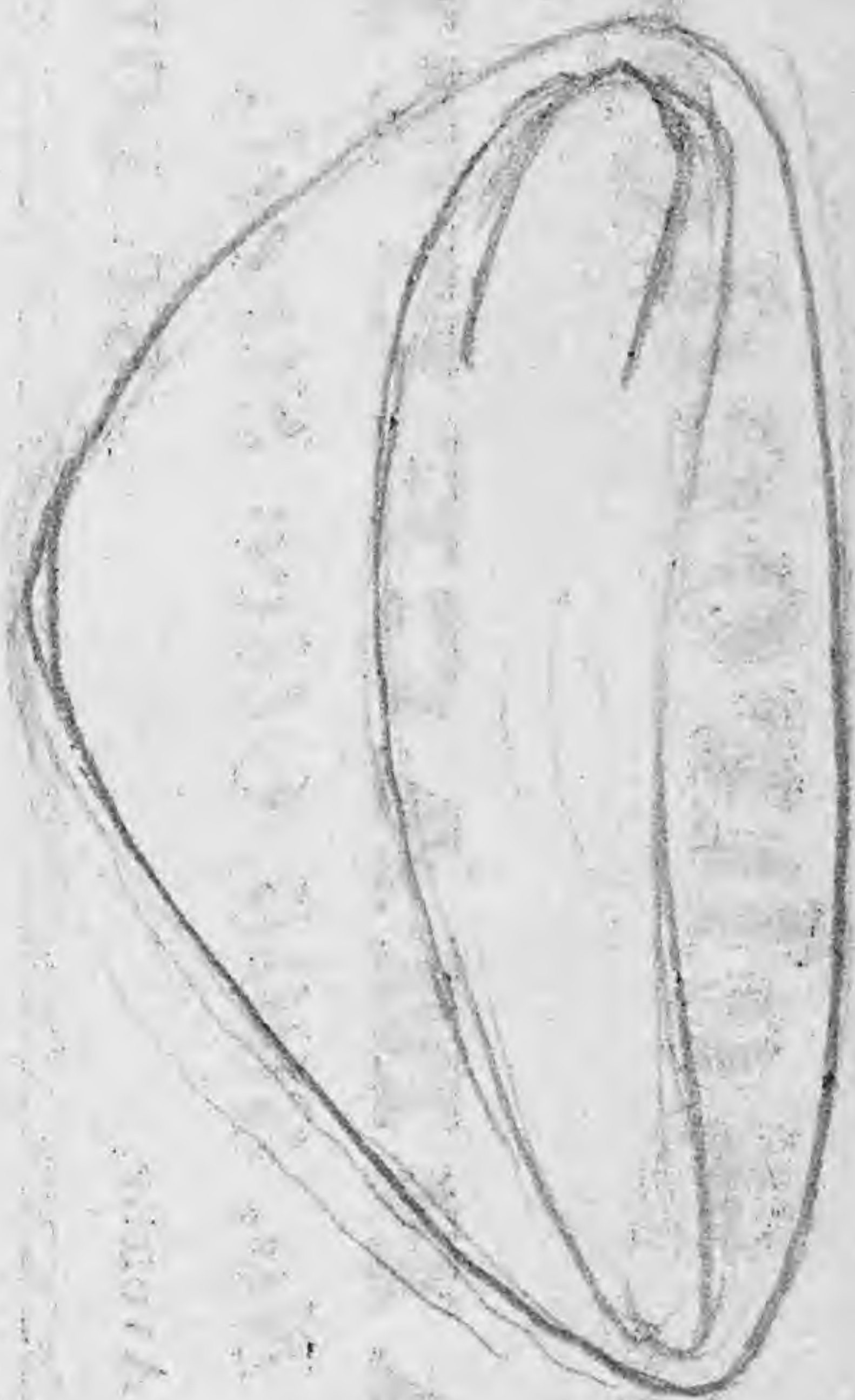
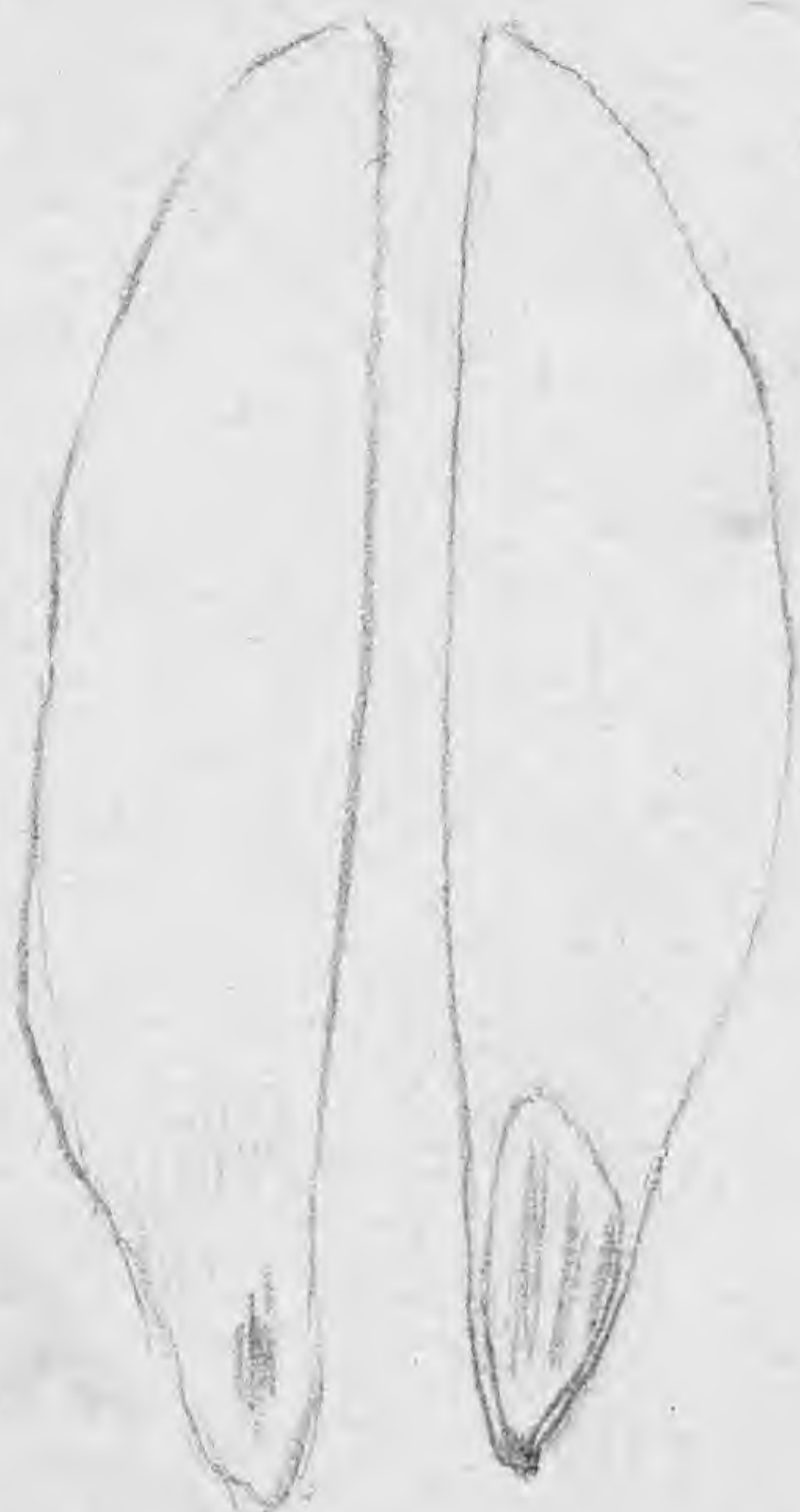
x4



x10



x2

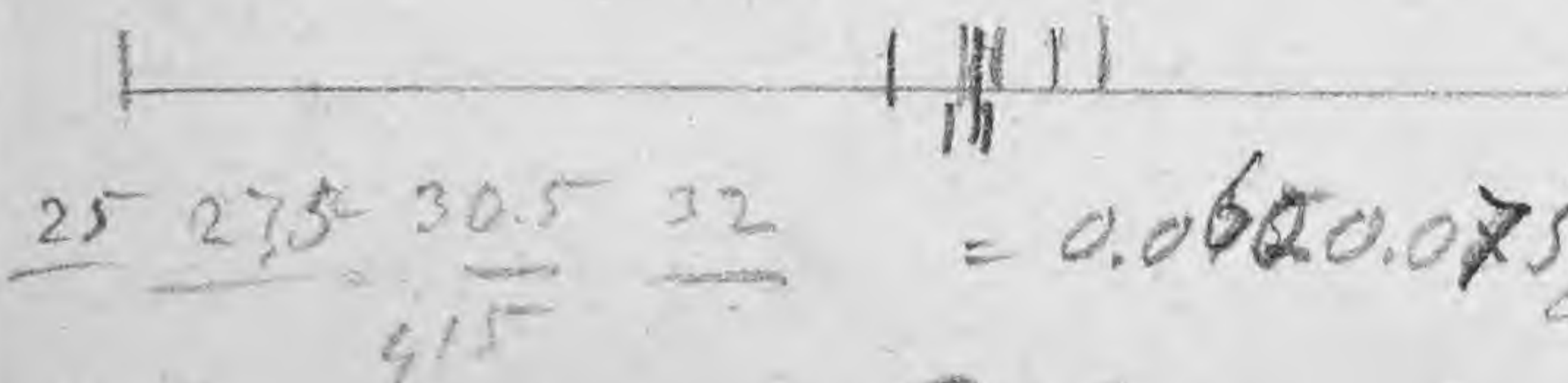


ventral or upper side  
stamens in 9 rows?

10-11  
scales

wing covering outside  
of seed almost  
entire

albumen  
& embryo



$= 0.0620.075^{in}$   
by  $0.07^{mm}$  mean  
pollen  
Pollen grains

x10  
3 with 4 costyl  
1 - 5 -



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

**D. Schroeder,**

**PHARMACEUTIST,**

*No. 3005 Olive Street,*

Near Garrison Avenue,

**ST. LOUIS, MO.**

No.

Date,

187

*R*

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11723



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



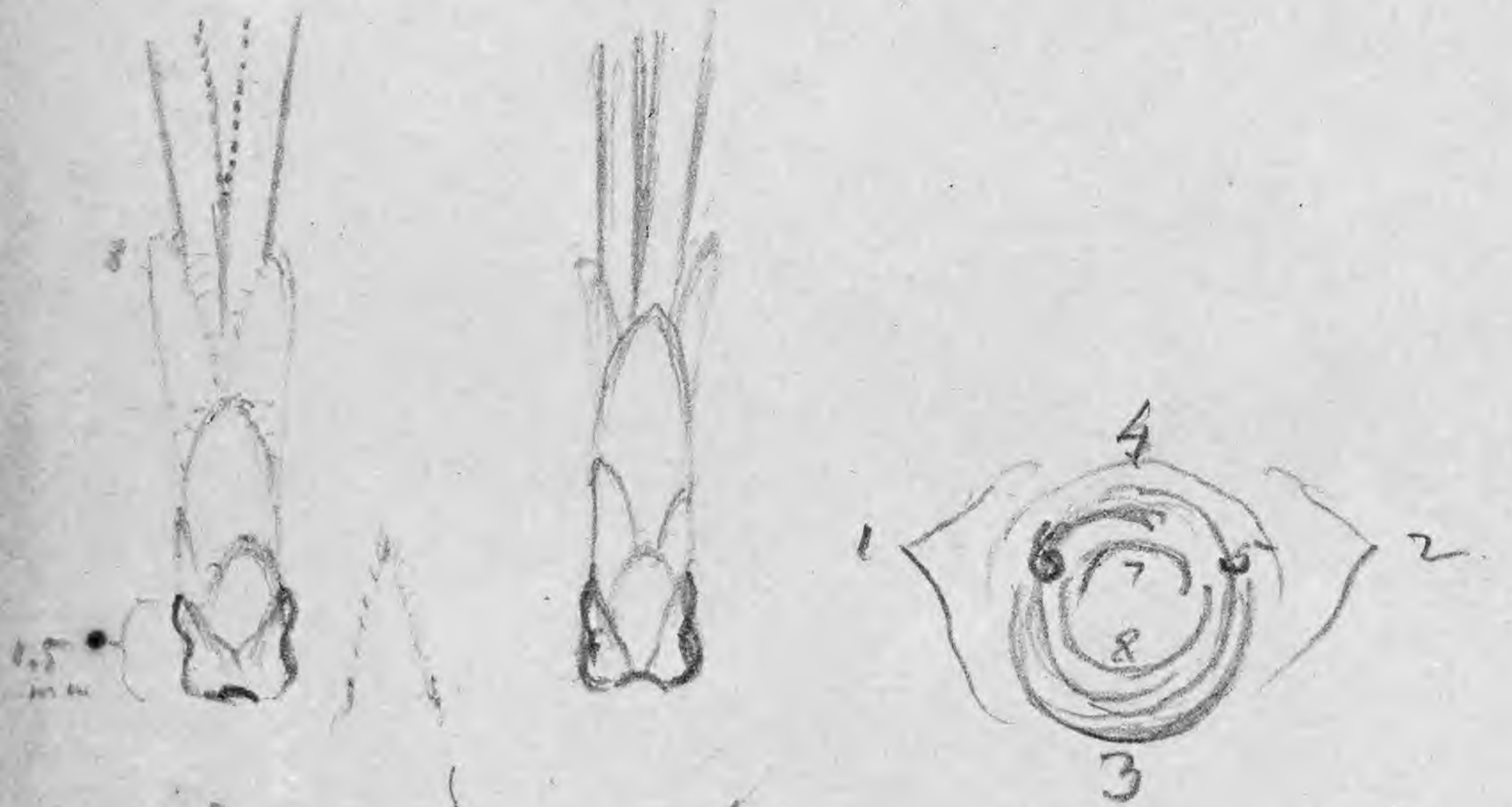
MISSOURI  
BOTANICAL  
GARDEN

*Pinus clausa*

May 22 1875

Apalachicola May 1875

Young sheaths of  
this spring. x4



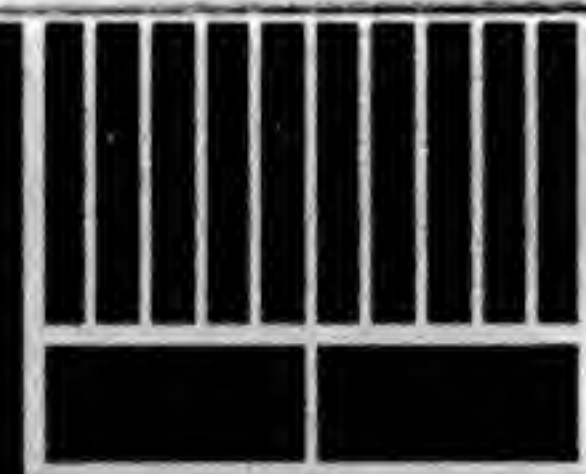
dorsal

ventral

sheath of leaves

8 or 10 bracts

bract soon  
deciduous  
half as long as sheath



0  
cm

1

2

3

4

5

6

7

8

9

10

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN



MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11724

JONES & LETTCH  
Stationers  
Cor. Fifth & Market Sts. ST. LOUIS, MO.  
J. M. Kellerman & Co. 355 N. Main St.



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

*Pinus clausa*

June 5 1879

Apalachicola, Florida

Chapman leg. & coll.

x 4



very old Pollen

$$\frac{26-30}{415} = 0.063 - 72 \text{ mm}$$

10 involucre  
scales  
outer half as long  
as inner

8 series of stamens

old dry ament, soaked

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS  
MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS



0 1 2 3 4 5 6 7 8 9 10  
cm copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

Deutsche Apotheke.

—  
GEO. WOE,

Apotheker

No. 3610 North 10th Street,  
Between Mallinckrodt and Salisbury, ST. LOUIS, MO.

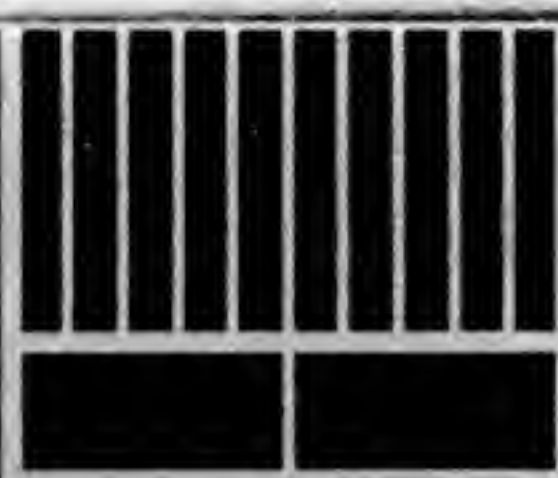
No. .... 187

For .....

Rp.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11725



0

1

2

3

4

5

6

7

8

9

10

cm

copyright reserved

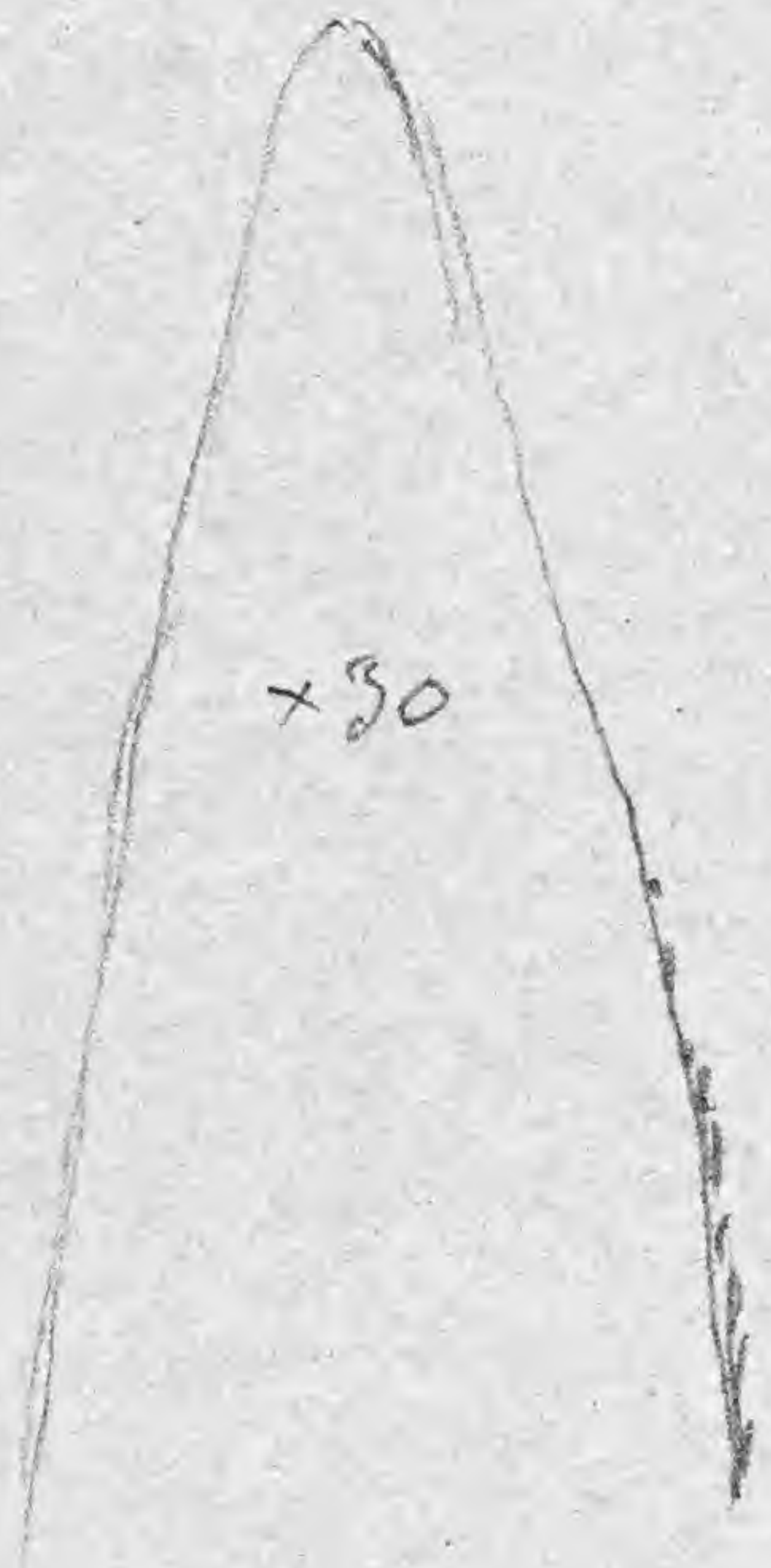
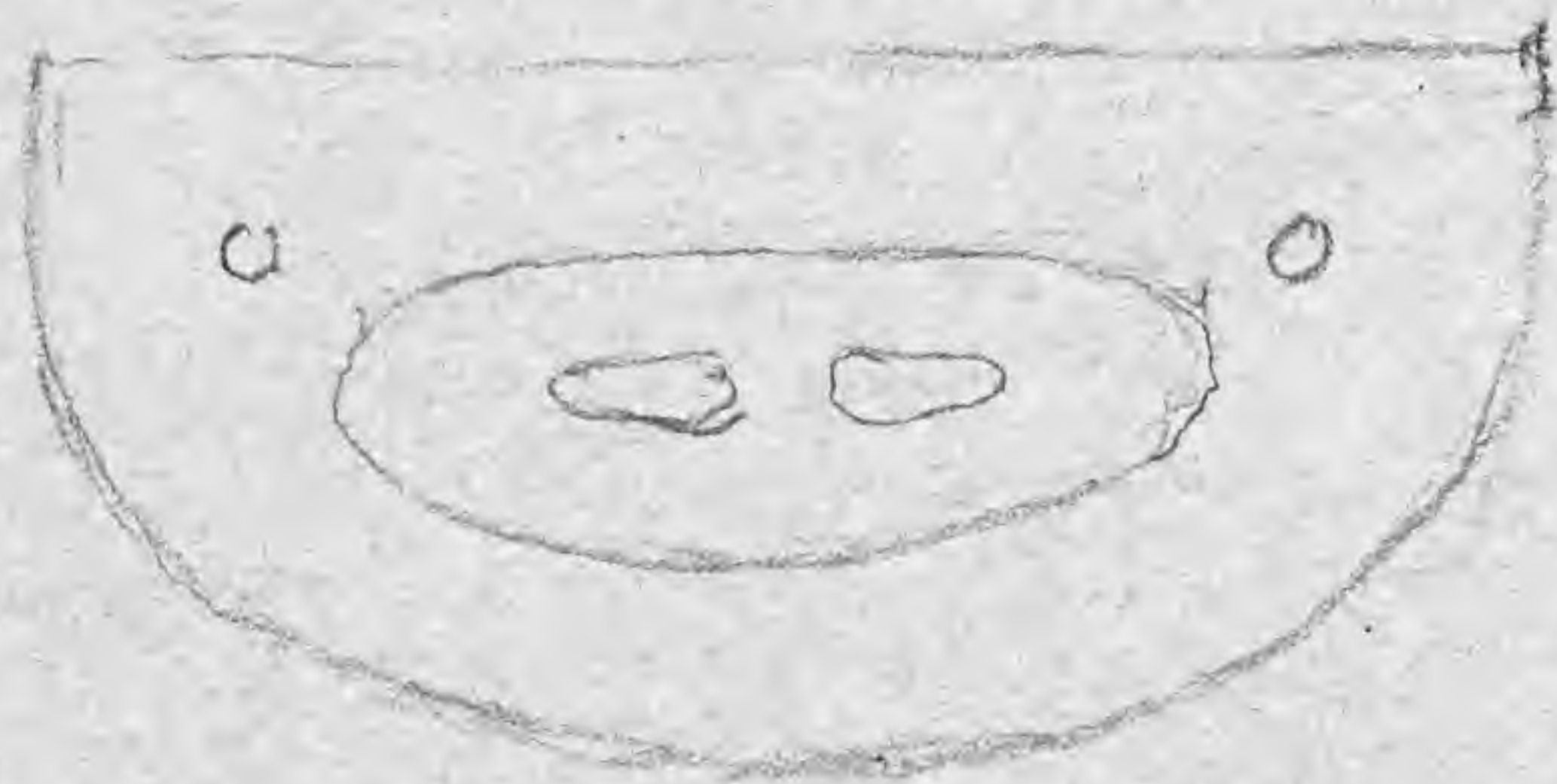


MISSOURI  
BOTANICAL  
GARDEN

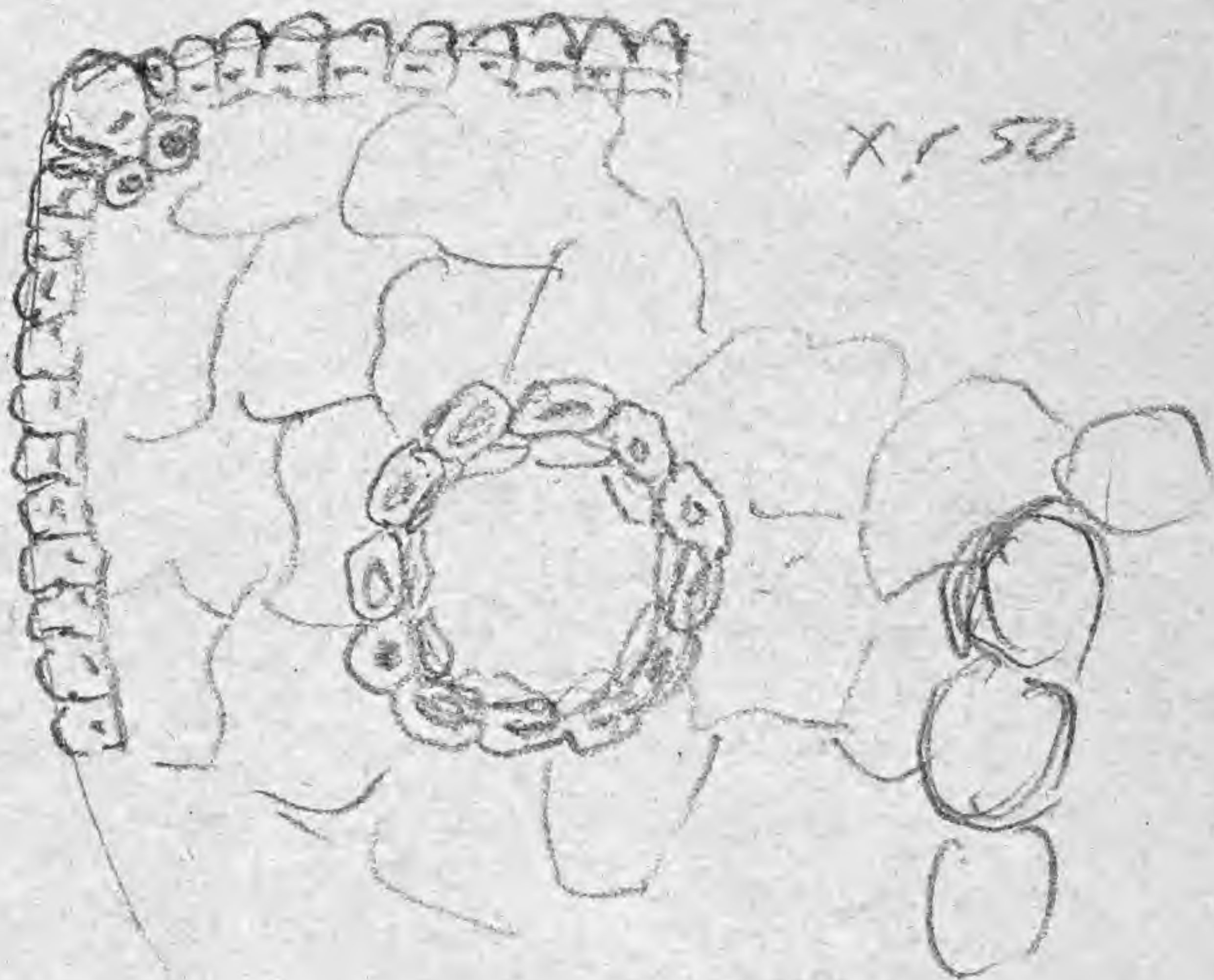
*P. clausa*  
*Apulachicola, Chapin*

May 21 1878

x 30



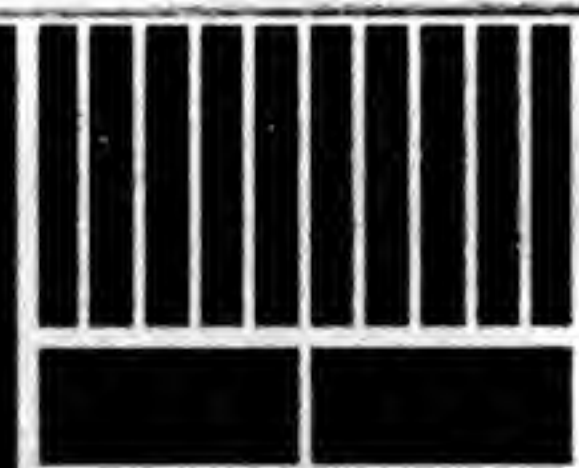
x 60



x 150

hypoderm scarcely  
any, few cells or none  
at the angles -  
weak, thin walled cells  
around ducts

upper surface of leaf sometimes  
folded, wrinkled or ridged



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11726

No.  
1006 Olive  
Street.



PURE WINES AND LIQUORS FOR MEDICAL USE.

Cor. 5th  
and  
Walnut St



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

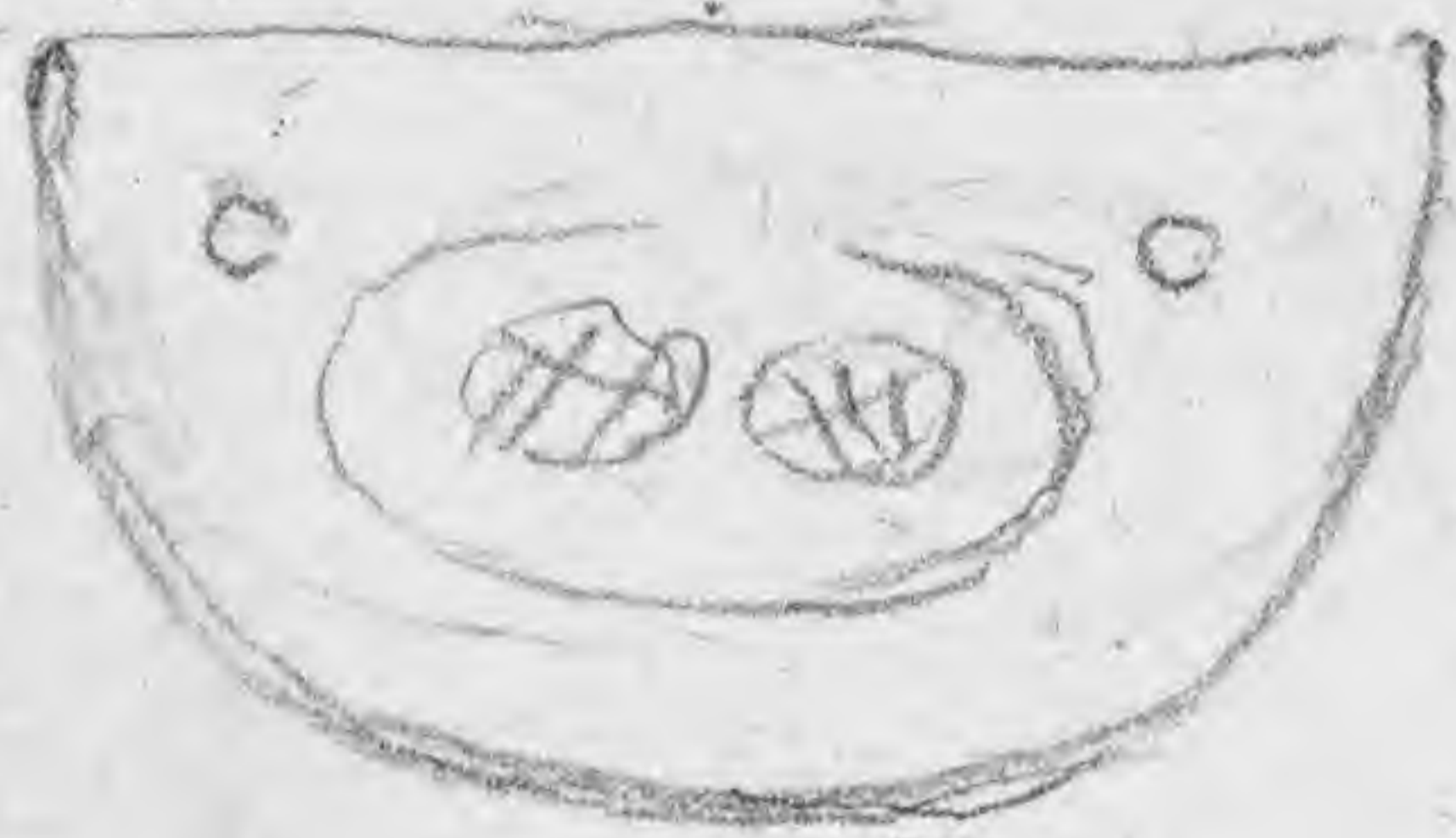
*P. mops clausa*

March 4 1880

Cedar Keys, Florida

Sargent 1880

x 30



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11727



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

Pinus Pinaster

627-36

reins zur Beförderung des Gartenbaues, 1860, Nos. 1-52—1861, Nos. 1-6, Berlin, *from the Society*; Atti della Societa Ital. di Scienze Nat., Milano, Vol. II., Fasc. 2, 1860, *from the Society*; Atti dell I. R. Istituto Veneto, T. V., Ser. iii., Disp. 10—T. VI., Ser. iii., Disp. 1-3, 1860-1, *from the Society*; Visir- und Recheninstrumente von Ernst Sedlaczeh, Wien, 1856,—Rechenschieber, von E. Sedlaczeh, Wien, 1856,—Kompendium der ebenen und sfärtschen Trigonometrie von E. Sedlaczeh, Wien, 1856, *from Mr. Senoner*; L'Ortolano, Giornale Popolare d'Orticultura, Trieste, Anno I. 1-12, III. 1-9, 1859-60,—Allocuzione da Prof. Adolfo Stopice, Trieste, 1860, *from the Society*; Fr. Ambrosii Flora Tiroliae Australis, Vol. II., Pt. 4, *from the Author*; Verhandl. des Naturh. Vereins, Bonn, Jahrg. XVII., 1-2, 1860, *from the Society*; Sitzungsab. der K. K. Akad. der Wissenschaften, Wien, Band XLII., No. 22-28, 1860, *from the Society*; Nachrichten von der Georg-Augusts-Univ. u. der K. Gesellsch. der Wissensch., Göttingen, 1860, No. 1-29, *from the Society*; Bull. de la Société Linnéenne de Normandie, Vol. V., 1859-60, Caen, 1861, *from the Society*; Mém. de l'Acad. Imperiale de Metz, Ann. XLI., 1859-60, *from the Academy*; Jahrbücher des Vereins für Naturk. in Nassau, XIV. Heft, Wiesbaden, 1859, *from the Society*; Dr. J. C. Ed. Hoser's Rückblicke, Prag, 1848, von Dr. Weltenweber,—Sitzungsab. der K. böhm. Gesellsch. der Wissenschaften, Prag, 1859, Juli-Dec.—1860, Jan.-Juni, *from the Society*; I. Bericht des Offenbacher Vereins für Naturk., 1860, *from the Society*; Würzburger Medicin. Zeitschrift, II. Band, 1-2 Heft, 1861, *from the Society*; Der Zoologische Garten, von Dr. D. F. Weinland, Jahrg. II., No. 1-6, 1860-61, *from the Editor*; XX. Bericht über das Museum Francisco-Carolinum, Linz, 1860, *from the Institution*; Monatsb. der K. Preuss. Akad. der Wissenschaften, 1860, Berlin,—General Register, 1836-58, Berlin 1860, *from the Academy*; Gelehrte Anzeigen, Vol. 49 & 50,—Sitzungsab. des K. bayer. Akad. des Wissenschaften, 1860, Heft 1-3, München,—Verzeichniss der Mitglieder, 1860,—Bedeutung der Sanskritstudien, von Dr. Wilh. Christ, 1860,—Denkrede auf. Alex. von Humboldt, von C. F. P. von Martius, 1860,—Grenzen und Grenzgebiete der physikalischen Forschung, von Dr. C. Harless, 1860, *from the Royal Academy*; Proceedings of the Nat. Sciences, Philad., May, 1860, *from the Academy*; 43d Anr. of the Trustees of the New York Society of Naturalists, 1860.



0 1 2 3 4 5 6 7 8 9 10  
cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN



11728

Der Zoolog...  
1860-61, from  
Akad. der Wissen-  
Berlin 1860, from  
Verzeichniss der  
Dr. Wilh. Christ,  
von Martius

162      TRANS. OF THE ACAD. OF SCIENCE.

Dr. Koch presented specimens of quartz and of the silicious conglomerate from Madison County mentioned in Dr. Hilgard's letter.

Dr. Engelmann stated that the mean temperature of July (77.5) had been lower than the usual mean of that month, and that the fall of rain during the same month (2.04 inches) was about one-half less than usual.

Dr. Wislizenus stated that the mean of atmospheric electricity of July had been 3.5° less than that of the month previous, and that the amount had been gradually decreasing since winter.

—  
August 19, 1861.

The President, Dr. ENGELMANN, in the chair.

Six members present.

A letter was read from A. F. Bandelier, Jr., Highland, Ill., Aug. 1, 1861, communicating meteorological observations at Highland.

The following donations to the library were received:

Bull. de la Société Géologique de France, Ser. ii., T. XVIII., Feuilles 13-14, 22-31, Paris, 1861, from the Society; Proc. Amer. Phil. Society, Philad., Vol. XVIII., No. 65, 1861, from the Society; Jour. Franklin Inst., Philad., Aug. 1861, from the Institute; Proc. Acad. Nat. Sciences, Philad., June, from the ; Maximilian I. König von ; Obereister von F. Gistel.

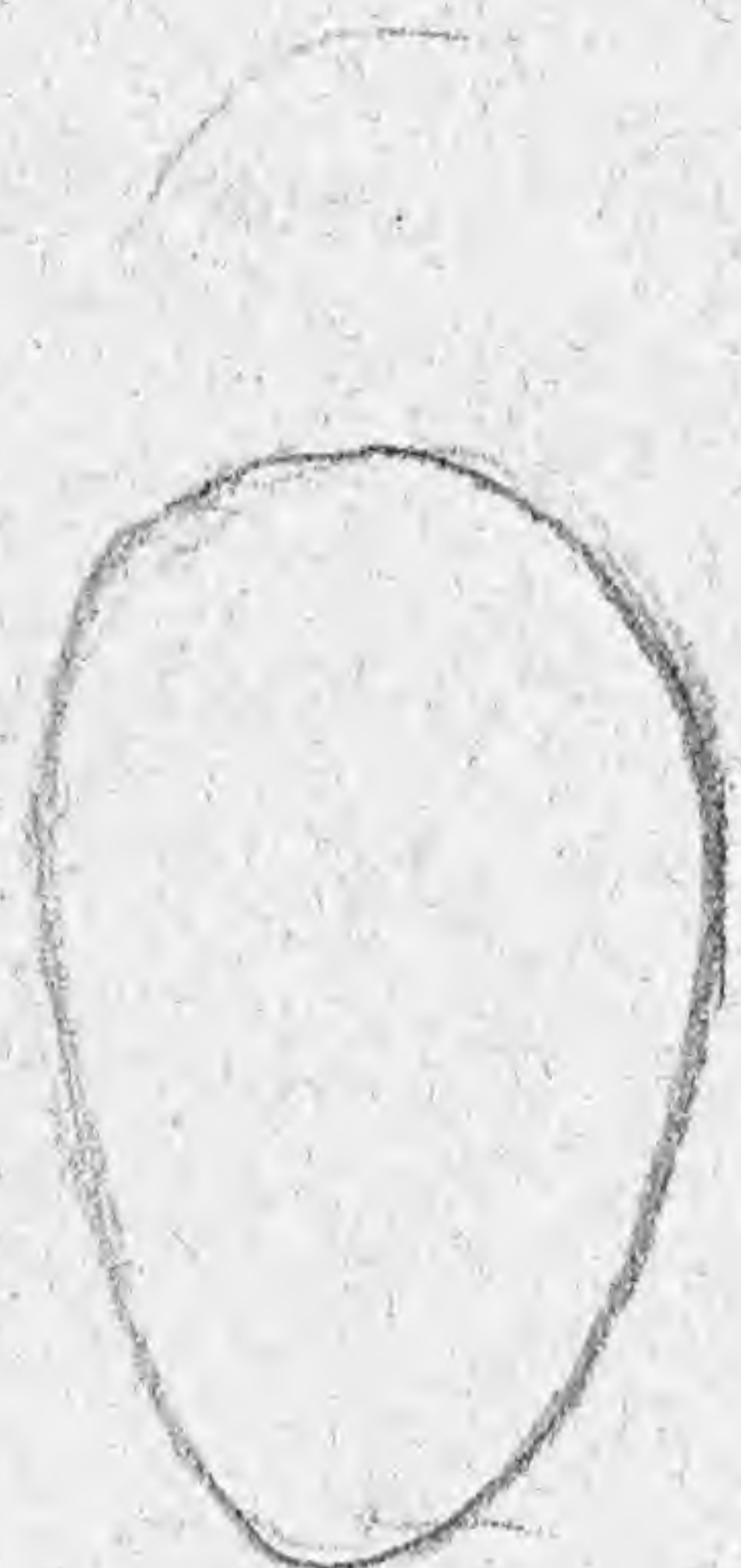
P. Martius



*Pinus Pinaster*

Florence Oct 15 68

Sestri Oct 2<sup>3</sup>



seed

x4



albumen  
with embryos

5-6 cotyledons



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

Décla.

Un Paquet en papier, cont  
vingt francs,

M<sup>r</sup> George Engel  
per Addr. M<sup>r</sup> Henry. Ny

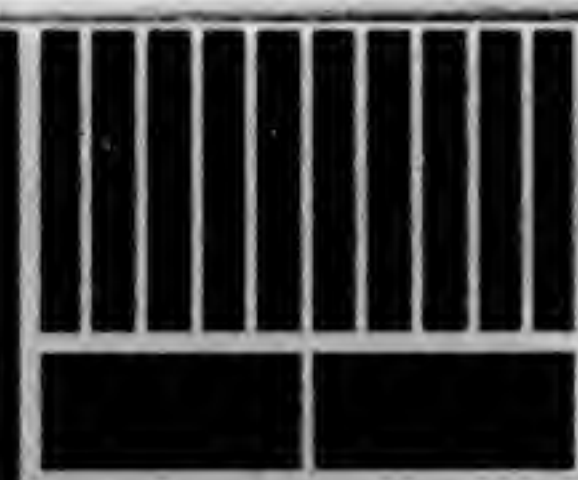
Francfort s. M. 25 Sept. 1860

expédié par



MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11729



0 1 2 3 4 5 6 7 8 9 10

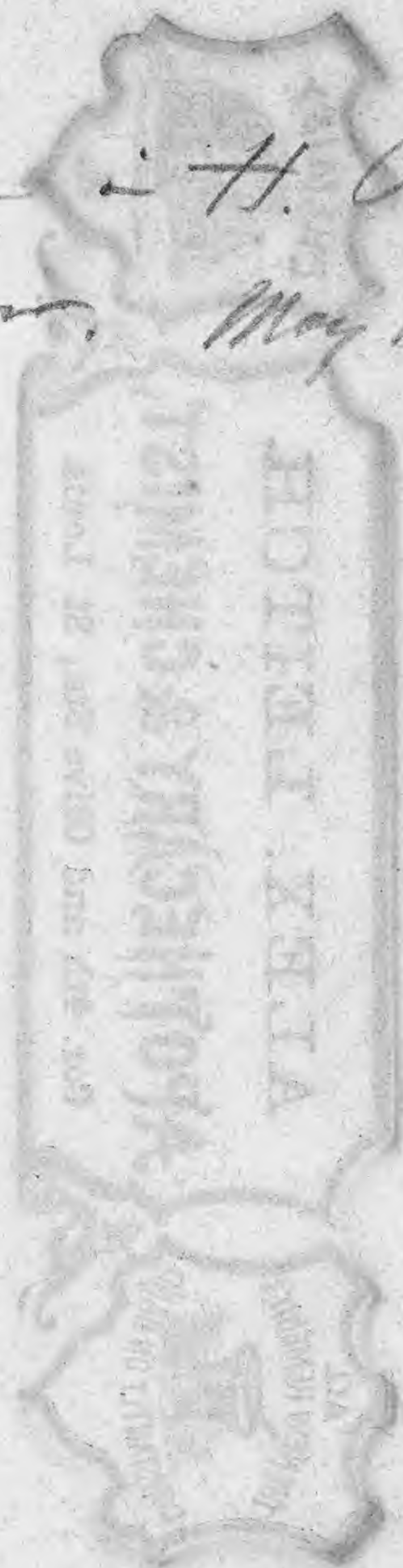
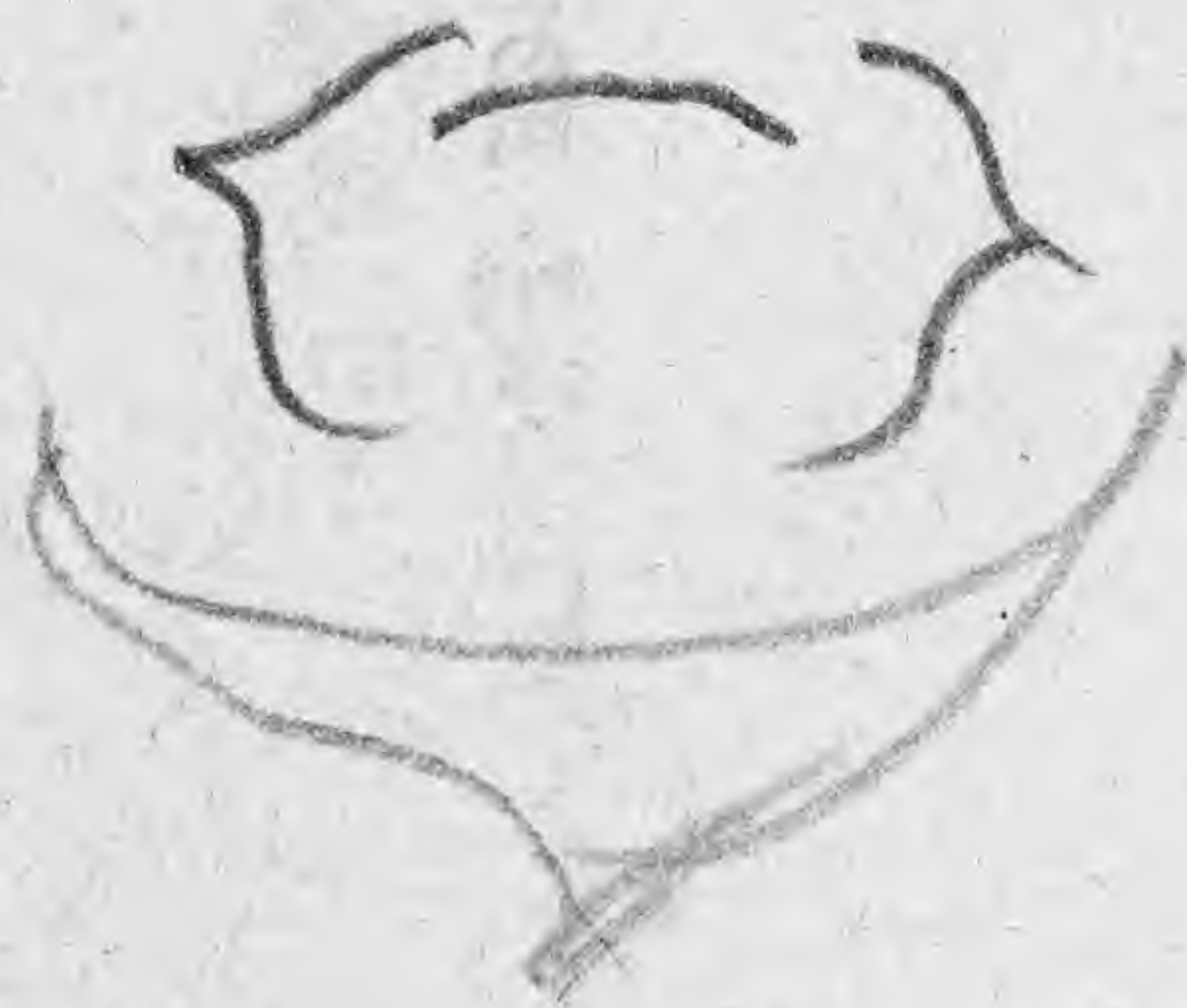
cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

*P. pinaster*  
sub nom. *maritima* — H. B.  
Missouri, May 1870



0 1 2 3 4 5 6 7 8 9 10


cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

CHEMIST



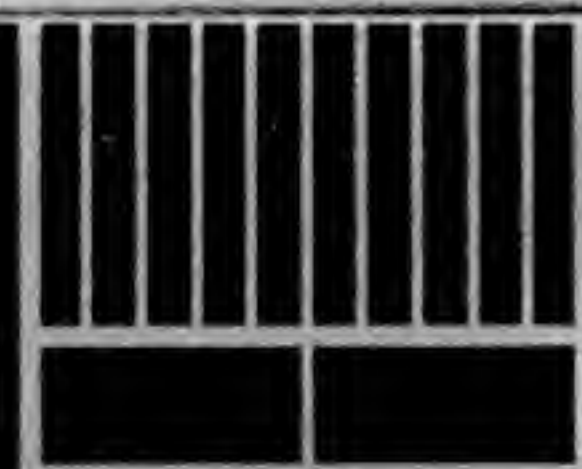
A

ALEX. LEITCH,  
APOTHECARY & CHEMIST,  
Cor. 4th and Olive Sts., St. Louis.

ALL THE NEW REMEDIES  
CONSTANTLY ON HAND

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11730



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

*Pinus Pinaster*

Sept 12 1877

Cult at San Jose Calif

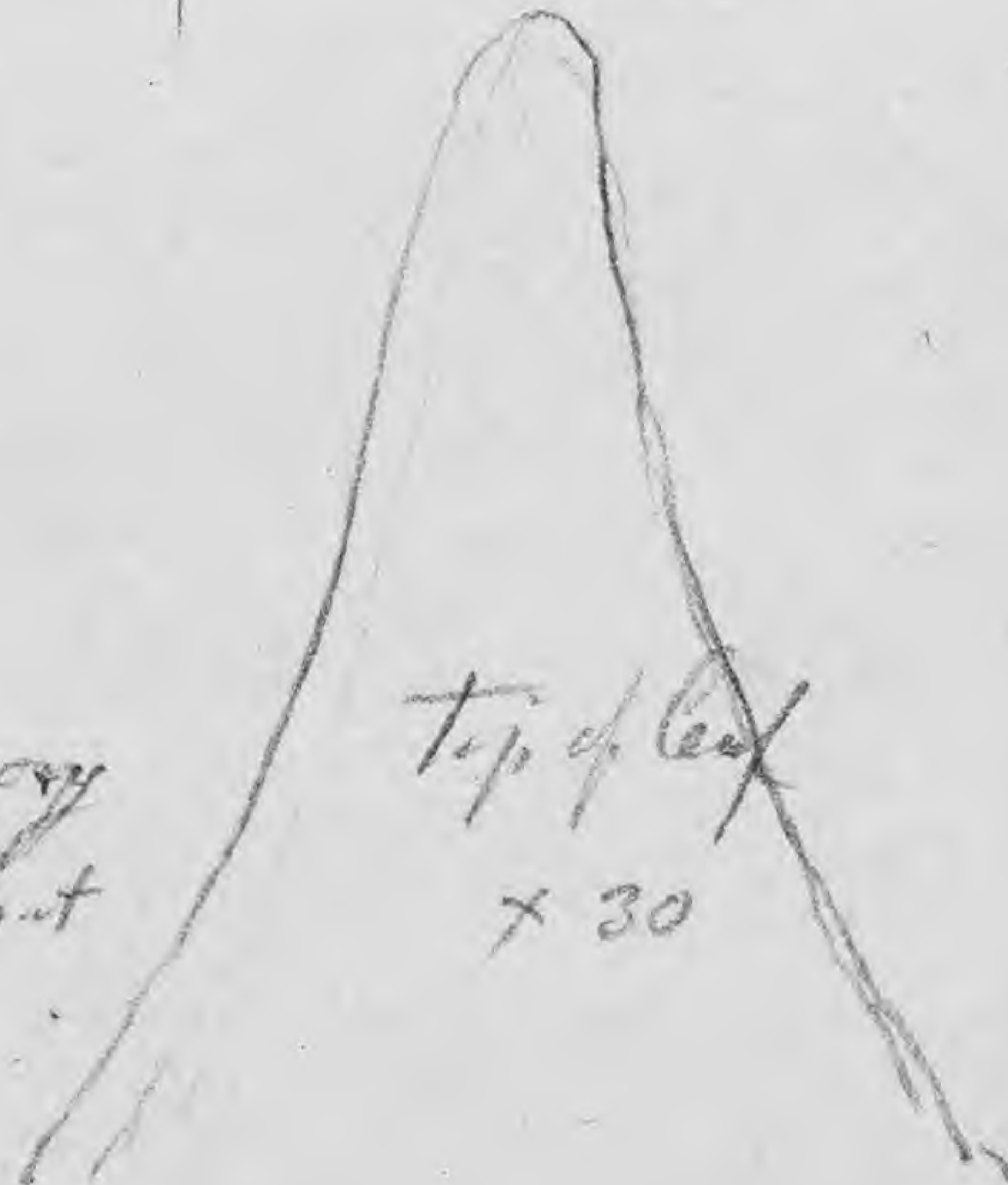
Dr Agony

Sept 1877

x30



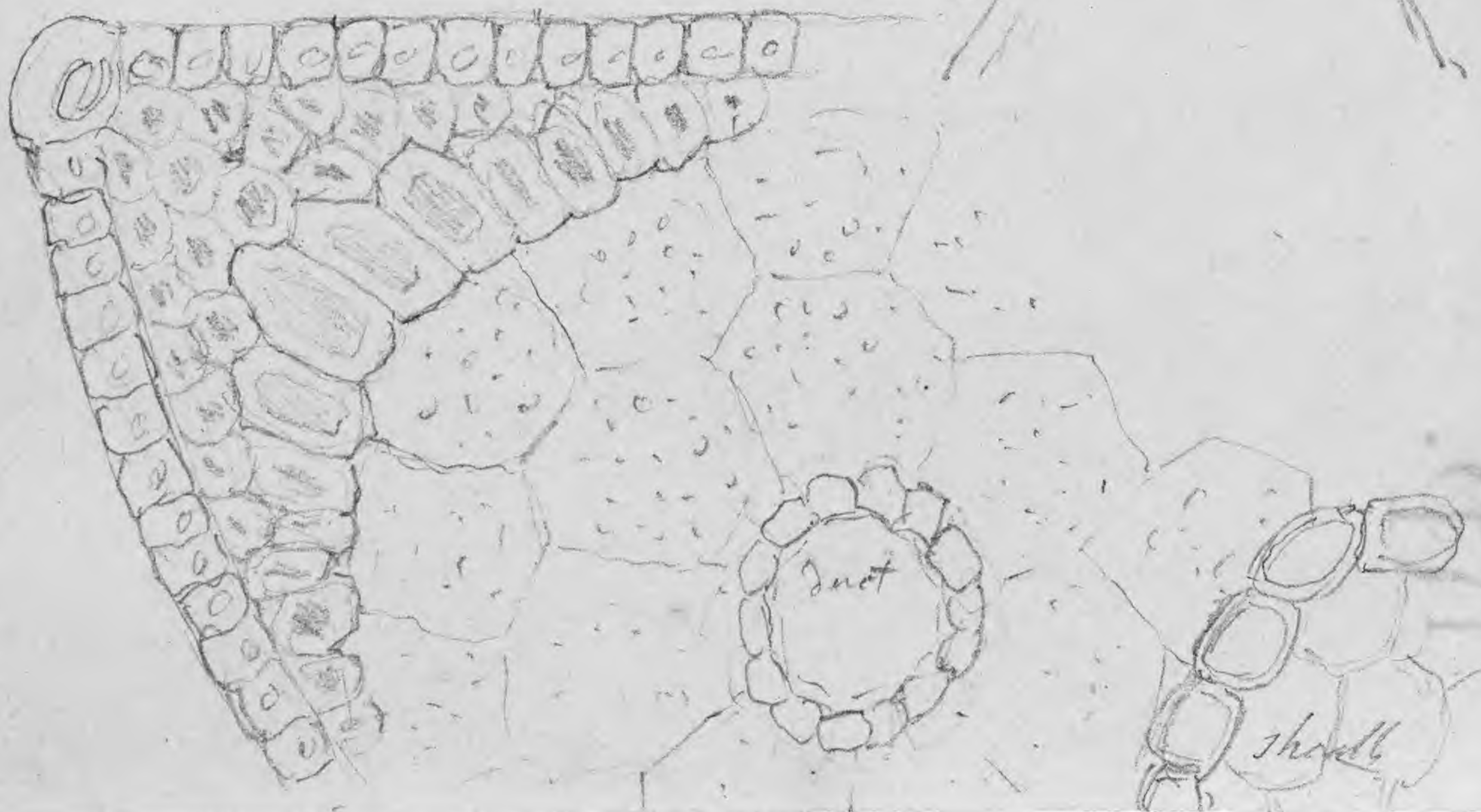
accessory  
not constant



Tip of leaf

x30

x150



duct

sheath

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS  
PUBLISHED BY THE GARDEN  
ST. LOUIS, MO.  
1877



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

Deutsche Apotheke.

— G. W. D. E.,

Apotheker.

No. 3610 North 10th Street,  
Between Mallinckrodt and Salisbury, ST. LOUIS, MO.

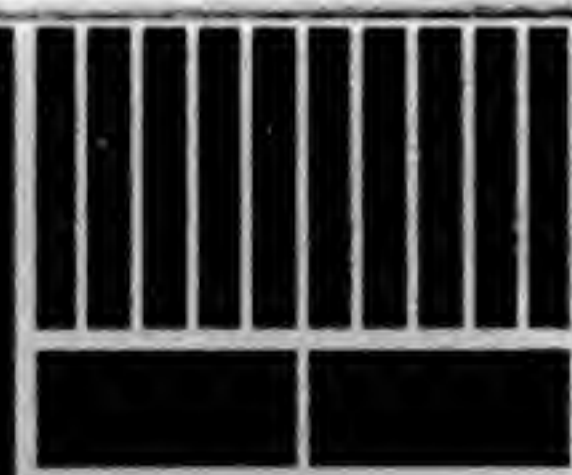
No. .... 187

For .....

Rp.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11731



0

1

2

3

4

5

6

7

8

9

10

cm

copyright reserved



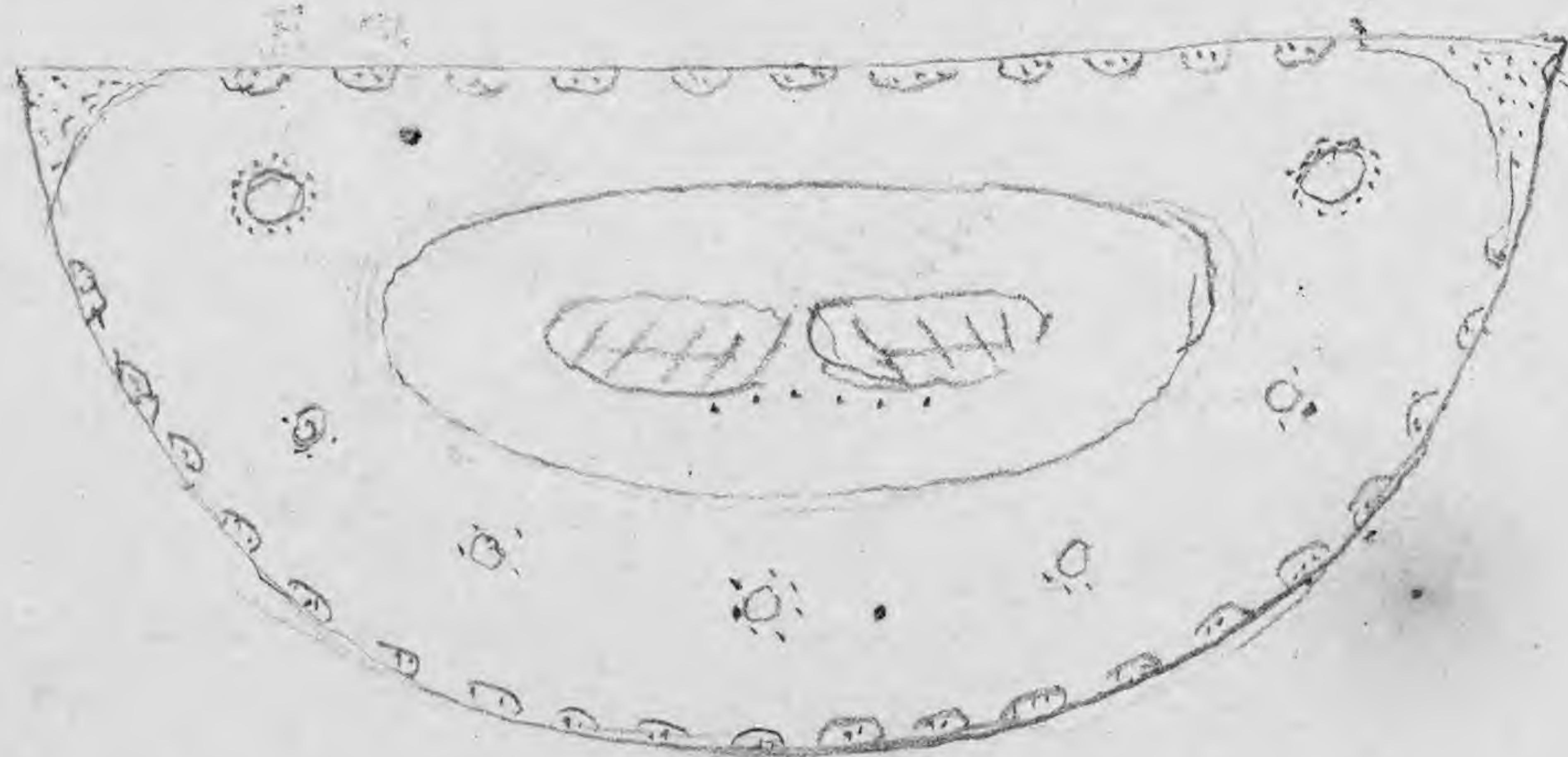
MISSOURI  
BOTANICAL  
GARDEN

*Pinus Pinaster*  
Florence 1868

May 13 1879

10-12 series above  
20 below, as many hypoderm bundles

x 30

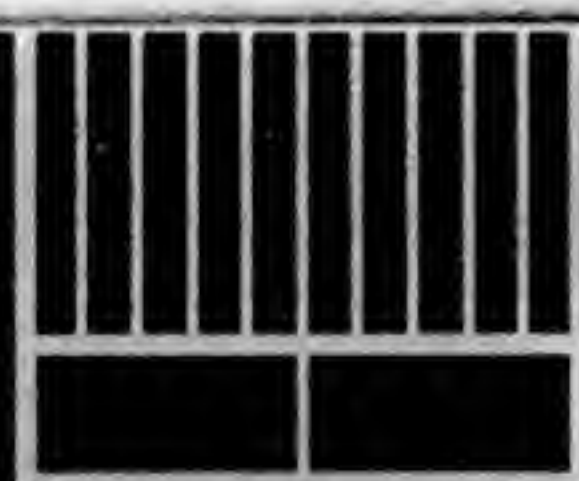


x 30



x 60

only 2 upper, or sometimes  
3-5 additional lower ducts  
all parenchymatous  
surrounded by hypoderm cells  
a few cells also below vessels  
in strength - numerous (10-12 above  
18-20 below) rows of stomata and between  
them strong bundles. Edges sharp



0  
cm

1

2

3

4

5

6

7

8

9

10

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN



HENRY T. BOHNTINS,  
APOTHECARY.

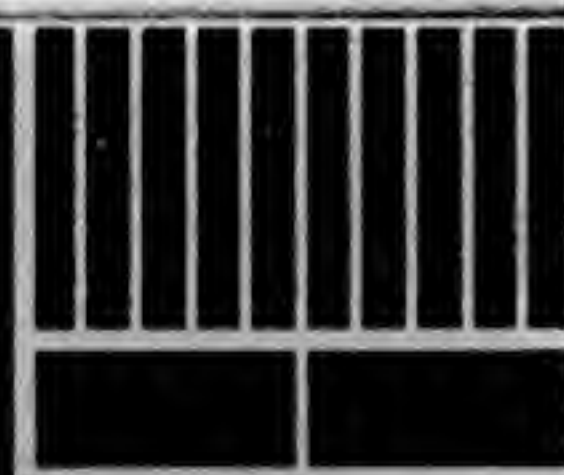
No. 2600 Laclede Ave., S. W. Cor. Jefferson Ave.

ST. LOUIS, MO.

*R*

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11732



0

1

2

3

4

5

6

7

8

9

10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

Leaves 5-6" stout (Paris)  
4-4½ slender (Kew)

P. P. Parlatou  
Paris 1832

young sheath 9" (Kew)

old — ~~4~~ 4" at least 2"

Bracts very strongly pruned, very deciduous, leaf's  
square base present

Axis of male inflorescence 1½-2"; that of female <sup>years</sup>  
square with the bases of the bracts

Leaf crowded - 1½ inch thick, cylindrical - oval

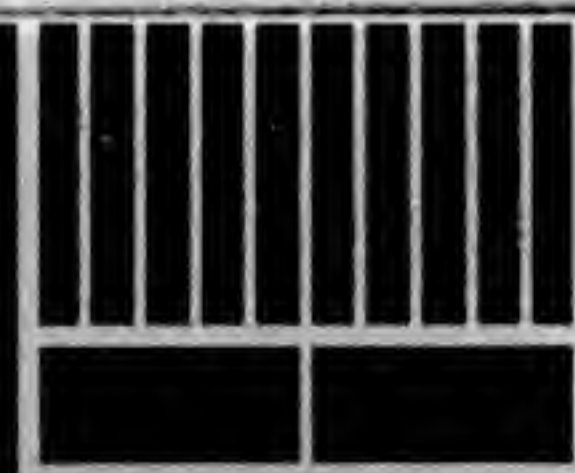
Bracts deciduous early.

Axis 6-7 l. long, stiped

Invol of 3 almost equal scales - 2 lateral

ones very strongly carinate. upper one petaloid  
all at base of stipe - once seen a 4<sup>th</sup> lower one  
higher up - near anthers, probably an <sup>posterior</sup> anther. (bracts)

Young shoots with herbaceous leaves, subulate primary leaves



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11733



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN



*Petas maritime* Link  
= *Pinaster*

*P. maritime* Lamb. Publ. 181 = *Petragosa* Cam  
Art. = *P. Lantano* Publ. 179 (395)

Lamark = *P. Pinaster* Publ 168

JOURNAL OF PROCEEDINGS.

161

reins zur Beförderung des Gartenbaues, 1860, Nos. 1-52—1861, Nos. 1-6, Berlin, *from the Society*; Atti della Societa Ital. di Scienze Nat., Milano, Vol. II., Fasc. 2, 1860, *from the Society*; Atti dell I. R. Istituto Veneto, T. V., Ser. iii., Disp. 10—T. VI., Ser. iii., Disp. 1-3, 1860-1, *from the Society*; Visir-und Recheninstrumente von Ernst Sedlaceh, Wien, 1856, — Rechen-schieber, von E. Sedlaceh, Wien, 1856, — Compendium der ebenen und sfärischen Trigonometrie von E. Sedlaceh, Wien, 1856, *from Mr. Senoner*; L'Ortolano, Giornale Popolare d'Orticultura, Trieste, Anno I. 1-12, III. 1-9, 1859-60, — Allocuzione da Prof. Adolfo Stopice, Trieste, 1860, *from the Society*; Fr. Ambrosii Flora Tirolicæ Australis, Vol. II., Pt. 4, *from the Author*; Verhandl. des Naturh. Vereins, Bonn, Jahrg. XVII., 1-2, 1860, *from the Society*; Sitzungsab. der K. K. Akad. der Wissenschaften, Wien, Band XLII., No. 22-28, 1860, *from the Society*; Nachrichten von der Georg-Augusts-Univ. u. der K. Gesellsch. der Wissenschaft., Göttingen, 1860, No. 1-29, *from the Society*; Bull. de la Société Linnéenne de Normandie, Vol. V., 1859-60, Caen, 1861, *from the Society*; Mém. de l'Acad. Imperiale de Metz, Ann. XLI., 1859-60, *from the Academy*; Jahrbücher des Vereins für Naturk. in Nassau, XIV. Heft, Wiesbaden, 1859, *from the Society*; Dr. J. C. Ed. Hoser's Rückblicke, Prag, 1848, von Dr. Weitenweber, — Sitzungsab. der K. böhm. Gesellsch. der Wissenschaften, Prag, 1859, Juli-Dec.—1860, Jan.-Juni, *from the Society*; I. Bericht des Offenbacher Vereins für Naturk., 1860, *from the Society*; Würzburger Medicin. Zeitschrift, II. Band, 1-2 Hefte, 1861, *from the Society*; Der Zoologische Garten, von Dr. D. F. Weinland, Jahrg. II., No. 1-6, 1860-61, *from the Editor*; XX. Bericht über das Museum Francisco-Carolinum, Linz, 1860, *from the Institution*; Monatsab. der K. Preuss. Akad. der Wissenschaften, 1860, Berlin, — General Register, 1836-58, Berlin 1860, *from the Academy*; Gelehrte Anzeigen, Vol. 49 & 50, — Sitzungsab. des K. bayer. Akad. der Wissenschaften, 1860, Heft 1-3, München, — Verzeichniss der Mitglieder, 1860, — Bedeutung der Sanskritstudien, von Dr. Wilh. Christ, 1860, — Denkrede auf Alex. von Humboldt, von C. F. P. von Martius, 1860, — Grenzen und Verhältnisse der physikalischen Akademie; P. Harless, 1860

*P. maritime* Pall. = *P. Lantano* Publ 179

= *P. Pallasiana* Lamb.

Camé 389

01 6 8 2 9 9 4 3 2 1 0

cm



162

TRANS. OF THE ACAD. OF SCIENCE.

Dr. Koch presented specimens of quartz and of the silicious conglomerate from Madison County mentioned in Dr. Highland's letter.

Dr. Engelmann stated that the mean temperature of July (77.°5) had been lower than the usual mean of that month, and that the fall of rain during the same month (2.04 inches) was about one-half less than usual.

Dr. Wislizenus stated that the mean of atmospheric electricity of July had been 3.5° less than that of the month previous, and that the amount had been gradually decreasing since winter.

August 19, 1861.

The President, Dr. ENGELMANN, in the chair.

Six members present.

A letter was read from A. F. Bandelier, Jr., Highland, Ill., Aug. 1, 1861, communicating meteorological observations at Highland.

The following donations to the library were received:

Bull. de la Société Géologique de France, Ser. ii., T. XVIII., Feuilles 13-14, 22-31, Paris, 1861, from the Society; Proc. Amer. Phil. Society, Phila., No. 35, 1861, from the Society; Jour. Franklin Inst., Phila., from the Institute. Dr. \_\_\_\_\_, Phila.; Max \_\_\_\_\_, Phila.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11734

May 31 1865

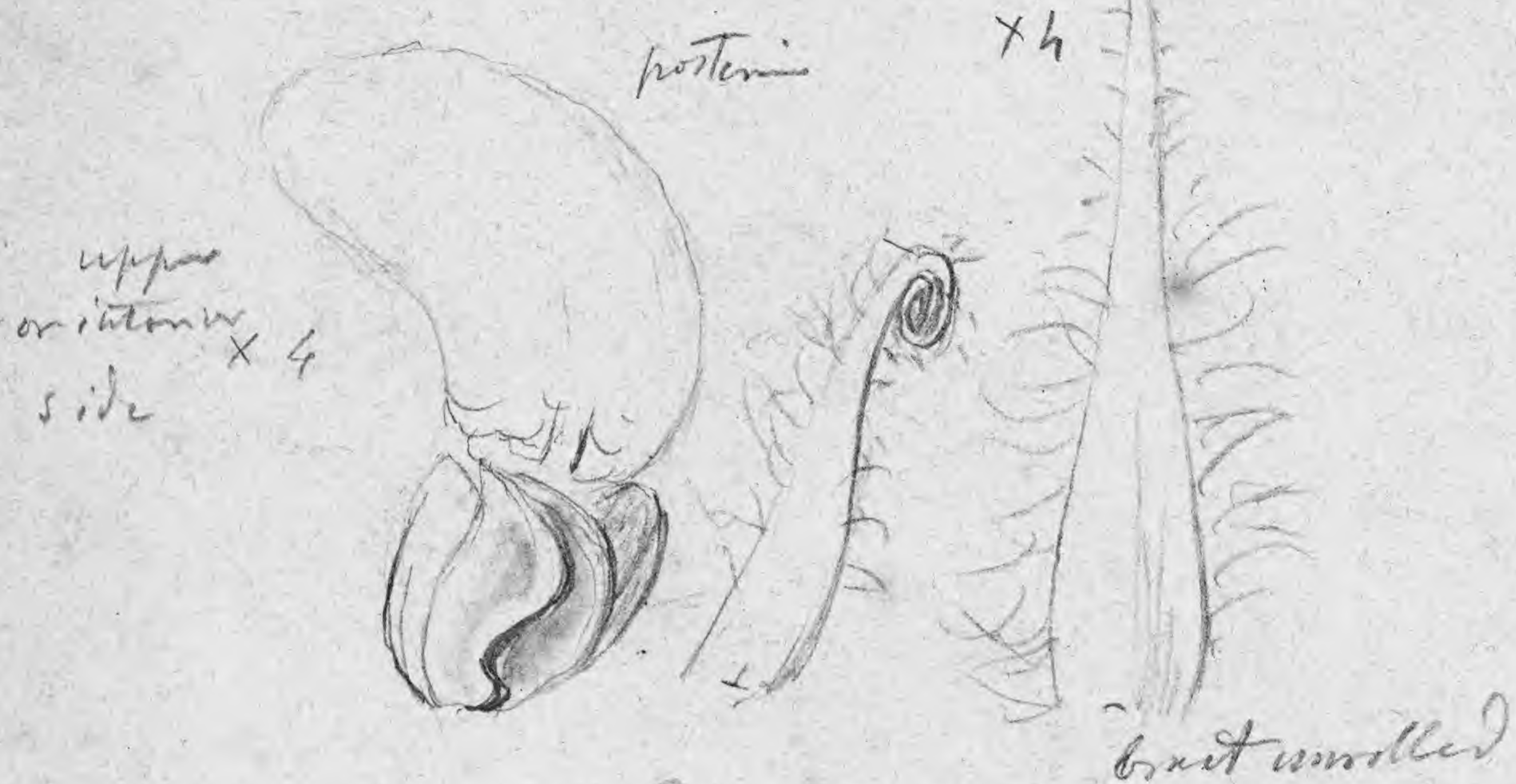
*Pinus marit*

Pollen

Germautown Pa, Mehan



0.041 - 0.047 lin  
average 0.044 lin



5 x 6 perigonal scales; the 5<sup>th</sup> & 6<sup>th</sup> higher up on the stipe



0 1 2 3 4 5 6 7 8 9 10  
cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

**ALEX. LEITCH,**  
**APOTHECARY & PHARMACEUTIST,**

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11785



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

"Pinus mantima" (2 leaves)

May 1863

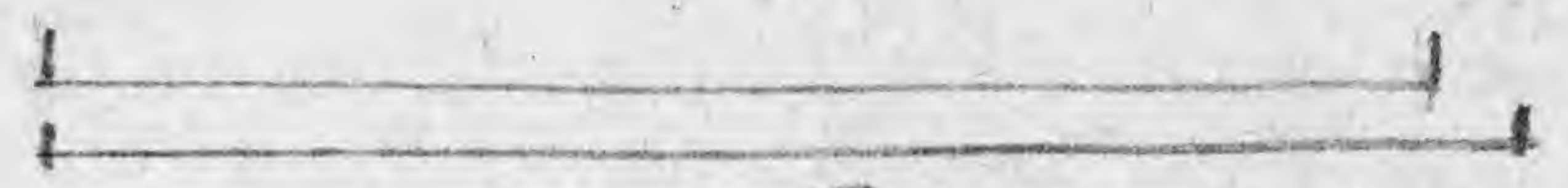
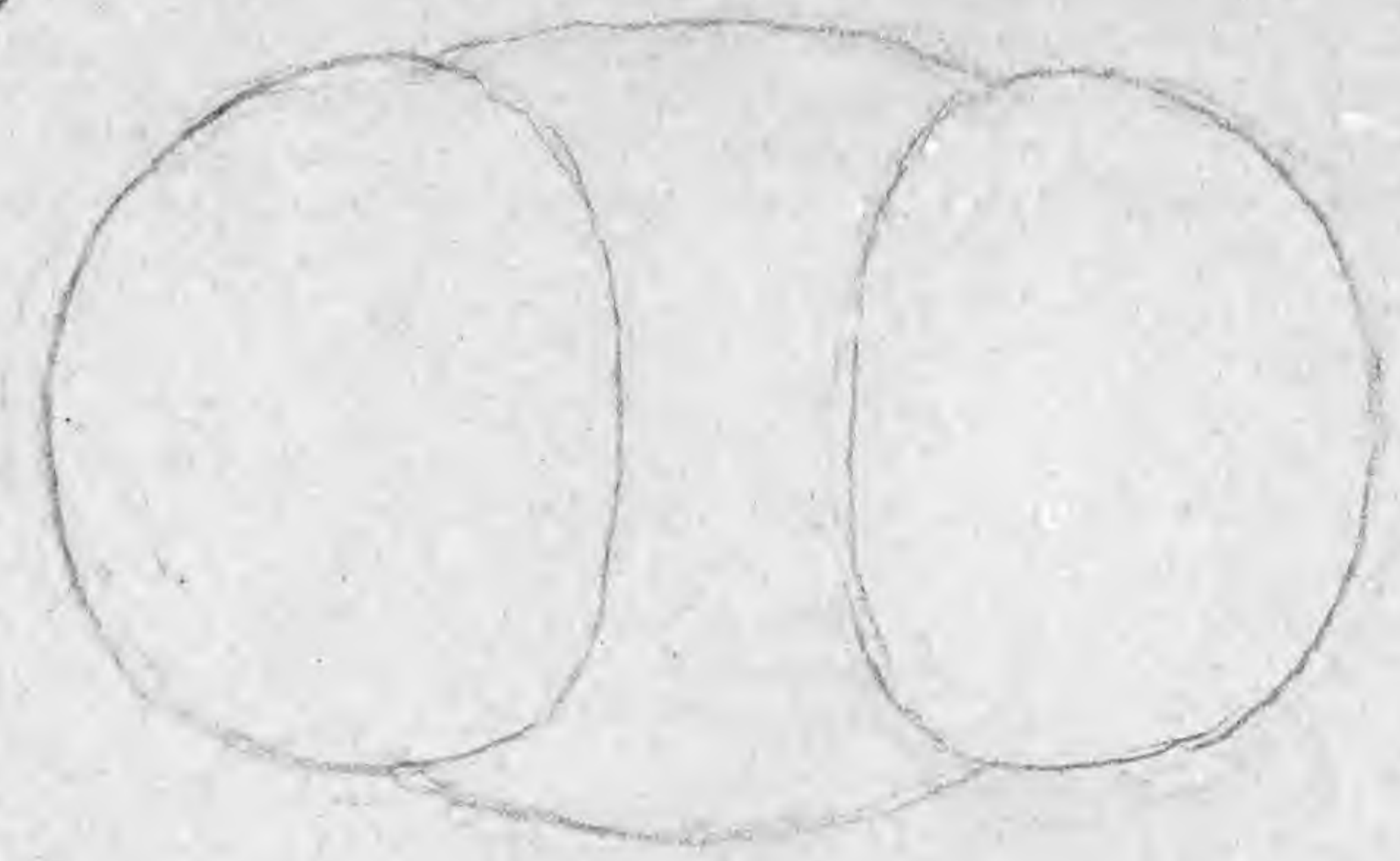
H. B. Mission. May 11 1863

male fl. in elongated spike

rose red,

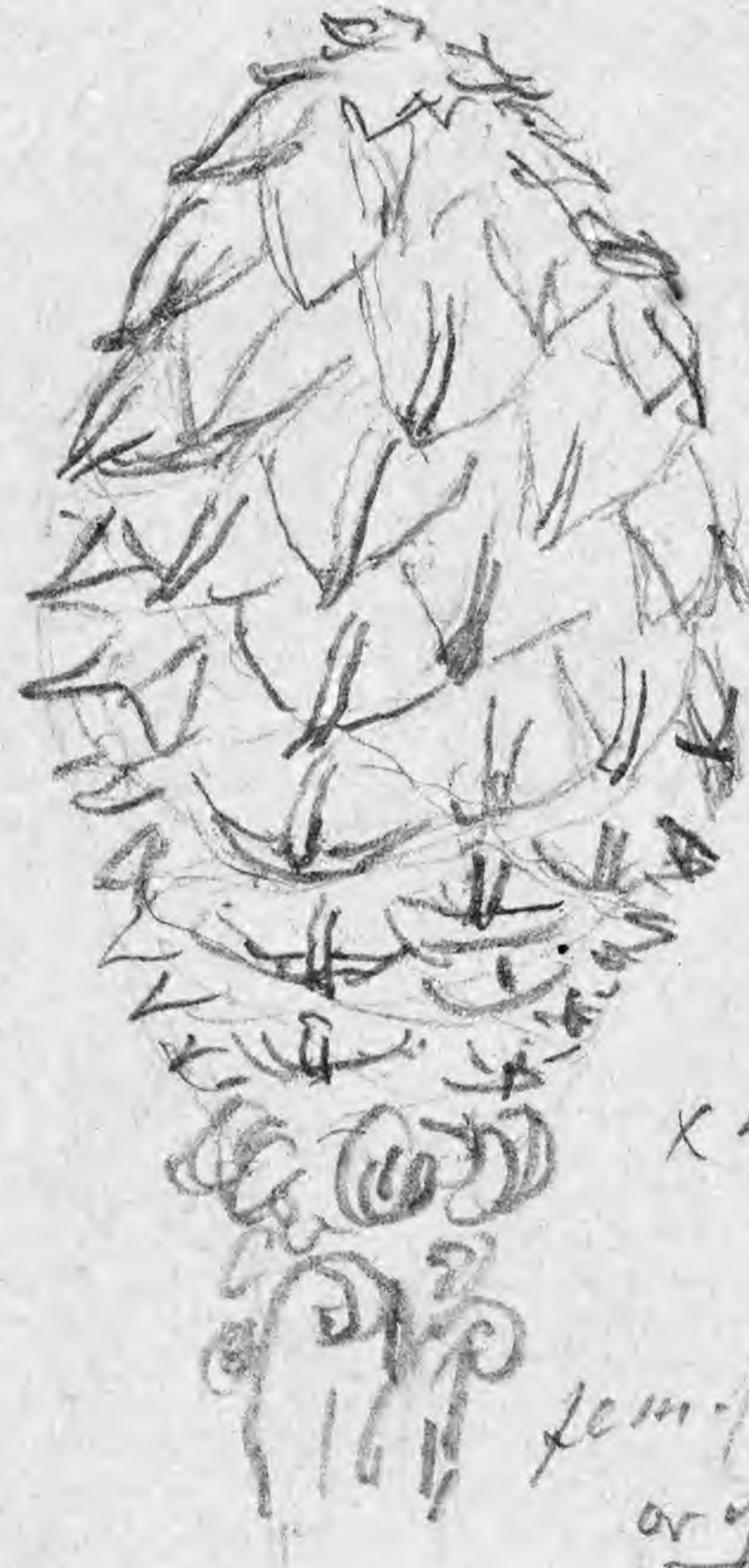
tips darker

x 415

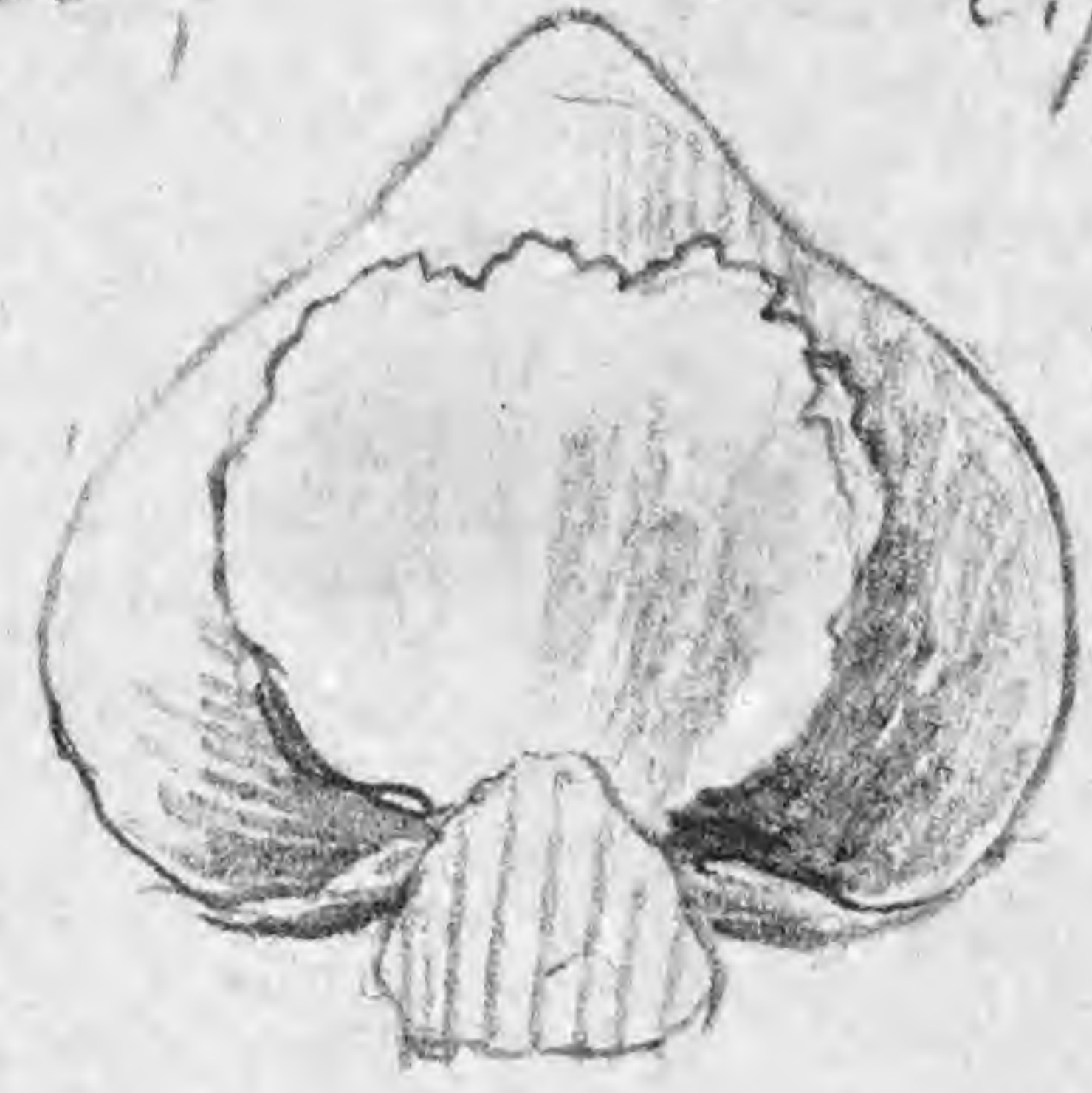


size of Pollen x 415

0.047-0.050



x 4



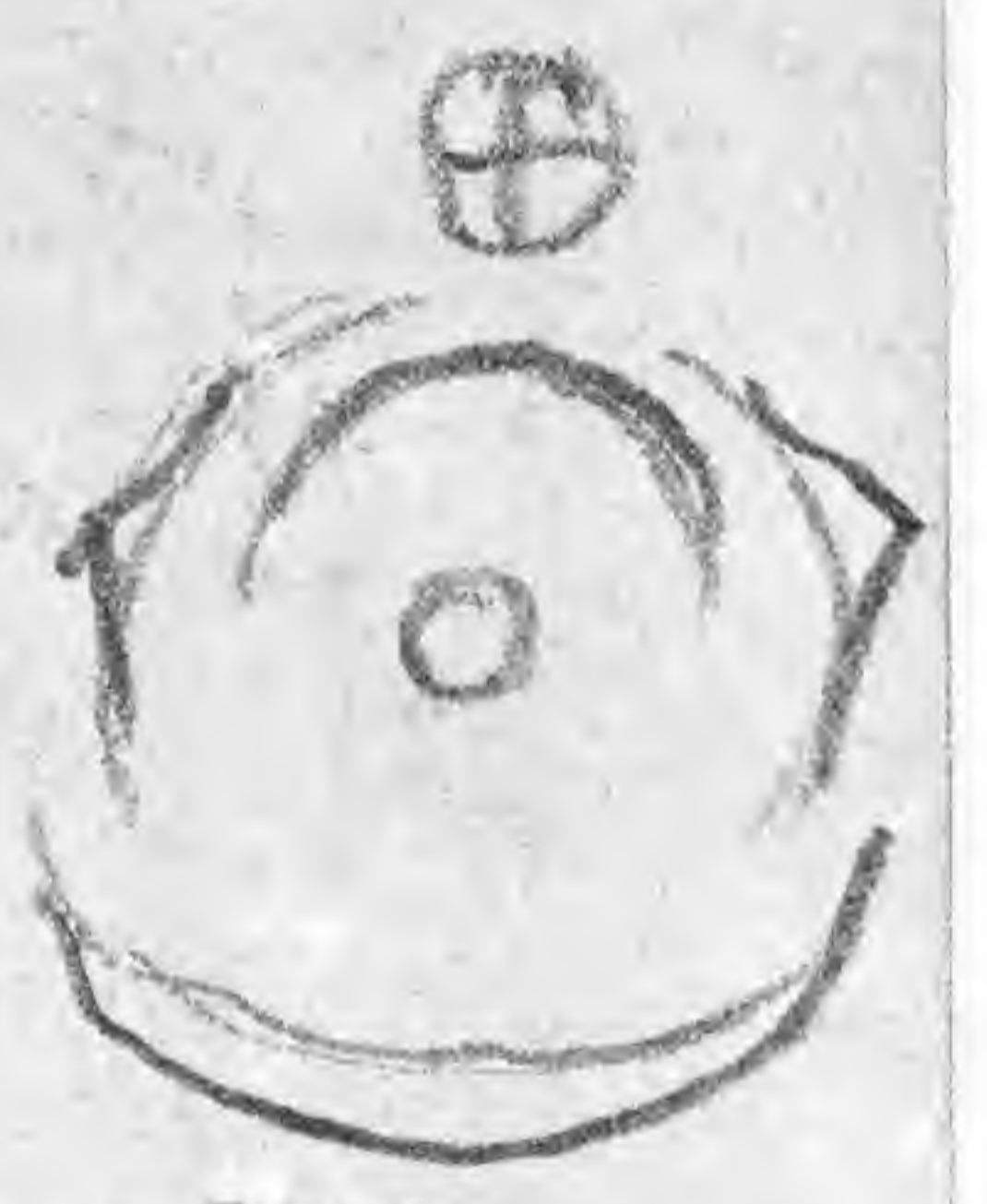
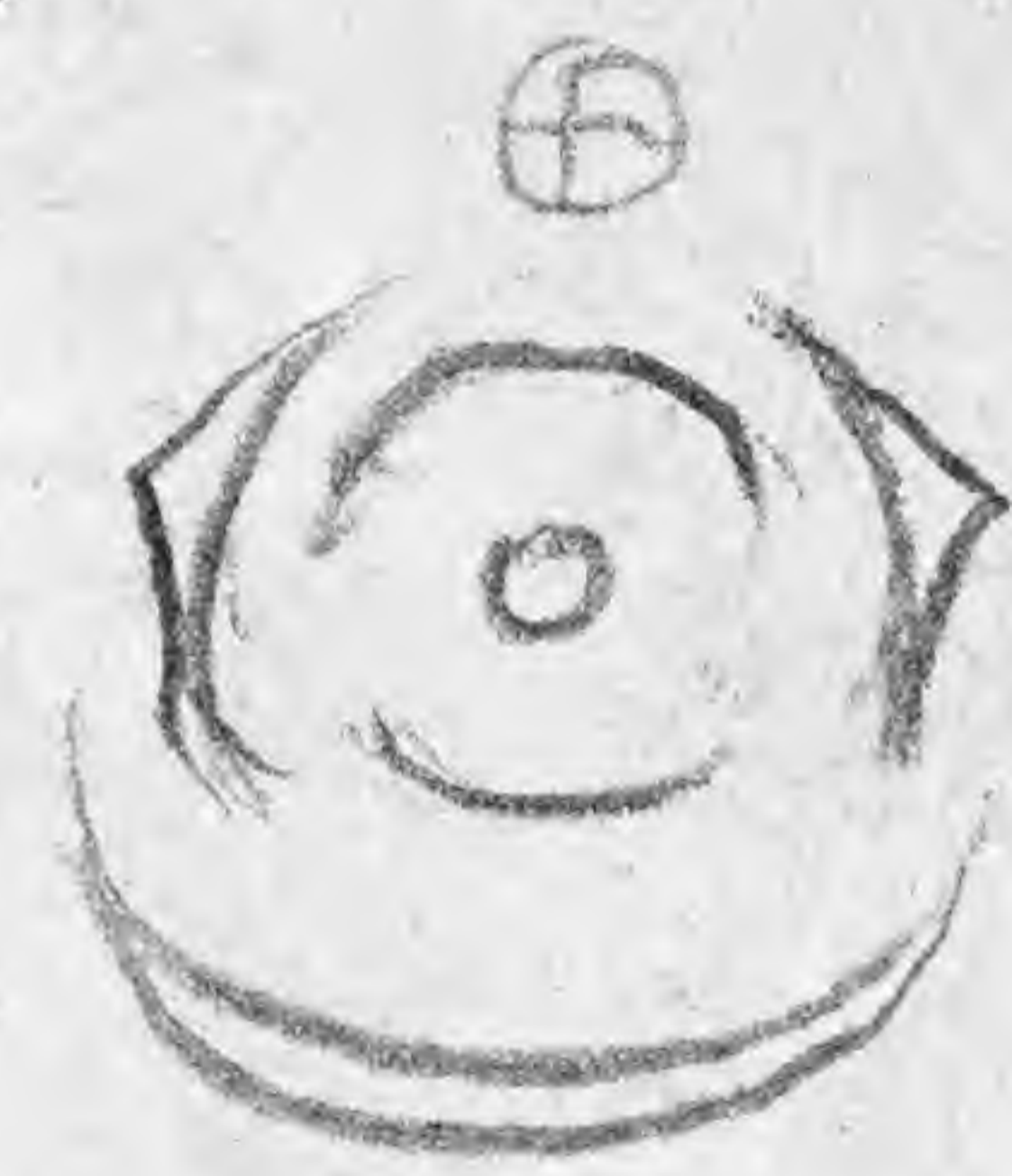
x 10



bract reflexed  
scale as bract.



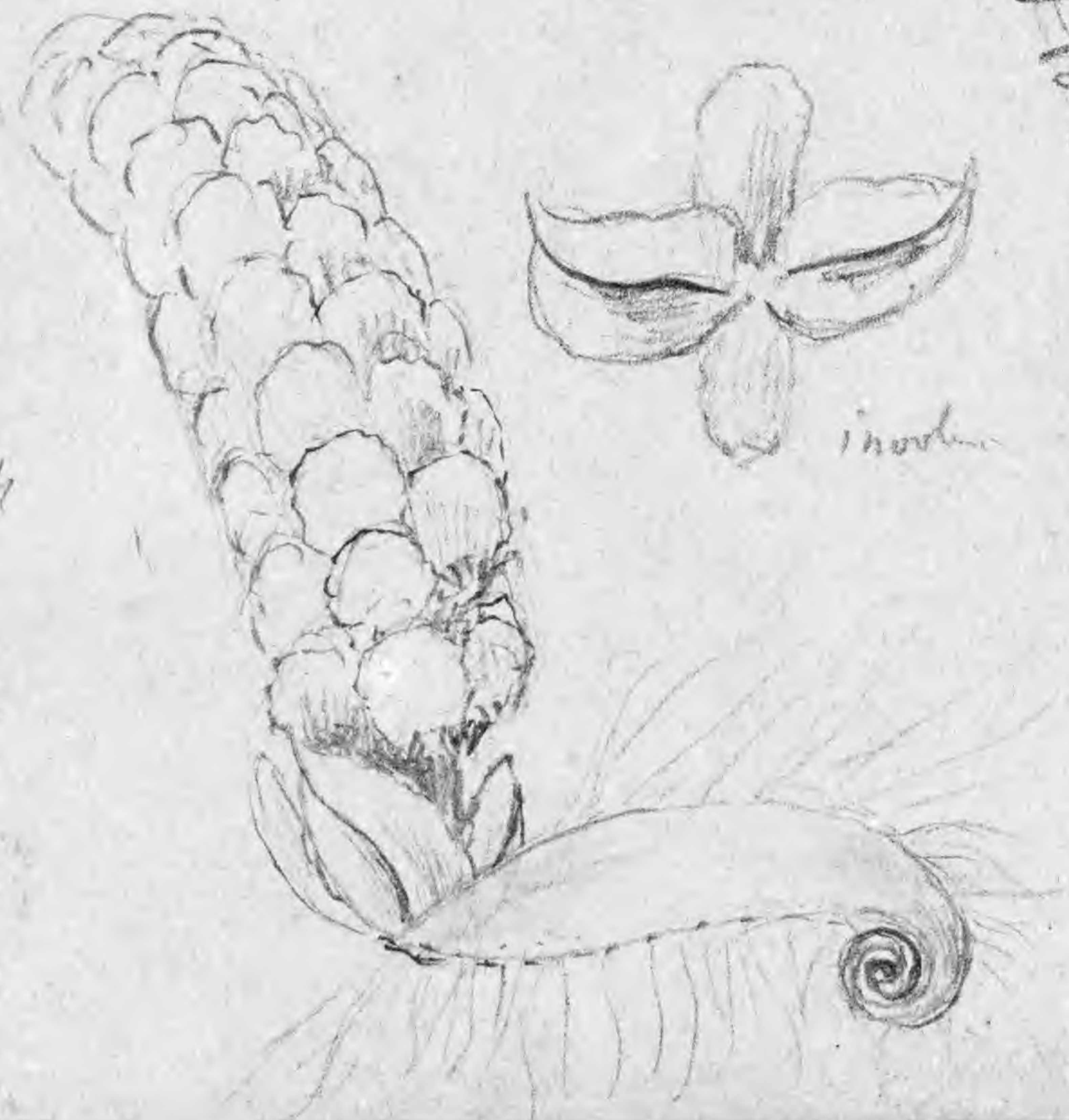
lateral



fem. filament  
or gyno. fil

May 23

x 4



x 10



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

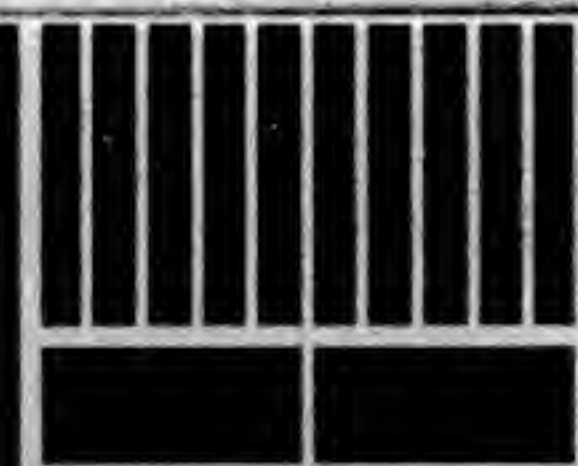


**M. W. ALEXANDER,**

SOUTHEAST CORNER OF FOURTH AND MARKET STREETS,  
ST. LOUIS.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11736



0

1

2

3

4

5

6

7

8

9

10

cm

copyright reserved

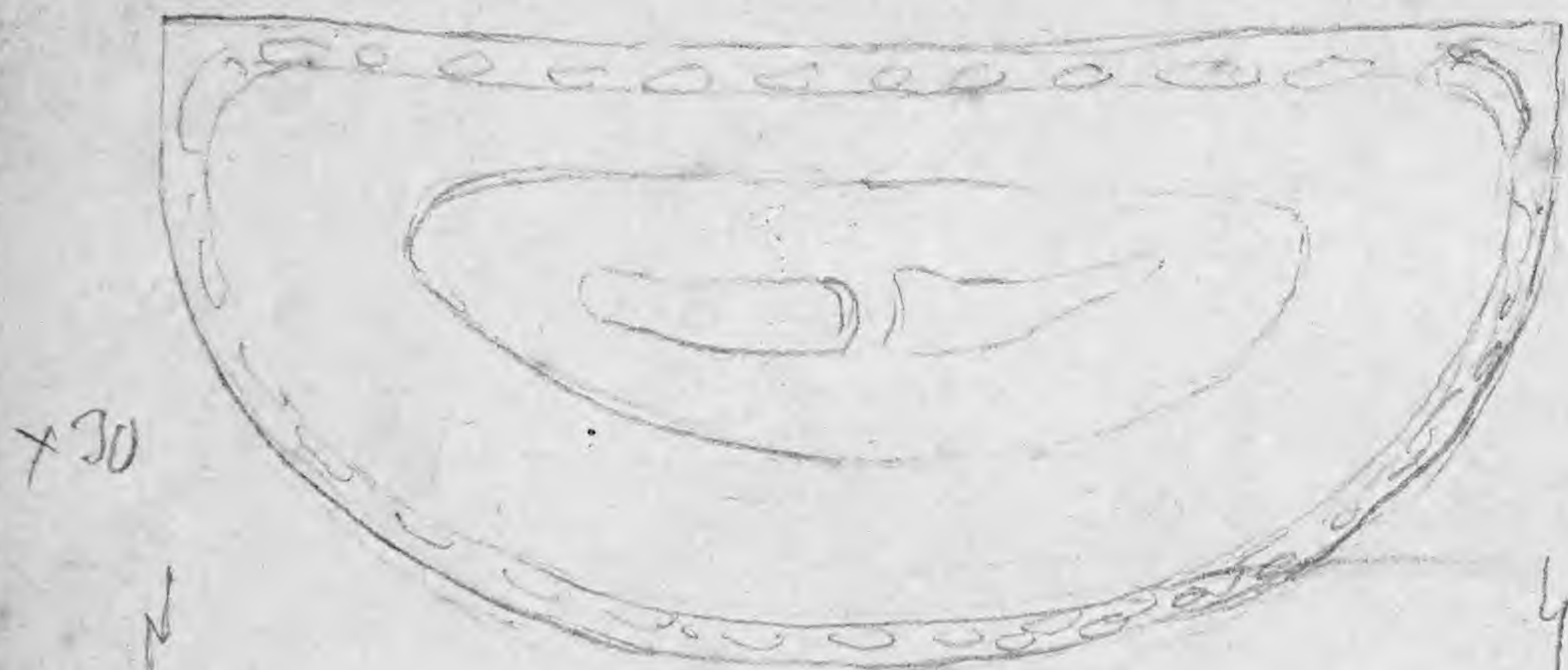


MISSOURI  
BOTANICAL  
GARDEN

"Pinus maritime"

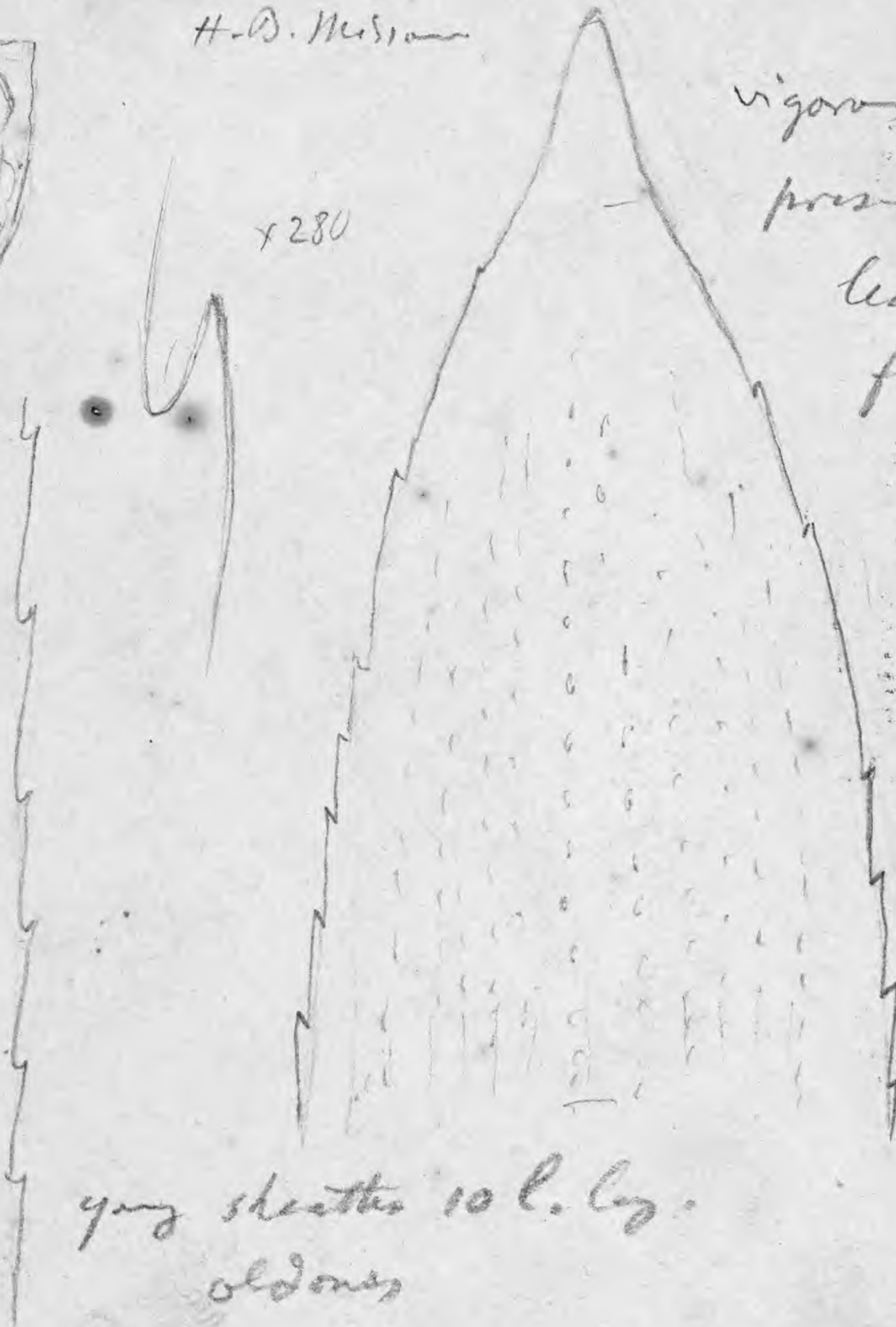
Aug. 1863

H.B. Mission



x30

x280



vigorous shoot of the  
past year -  
leaves 5" long  
fully 1.5" wide  
finely serrate

young shoots 10 l. long.  
old ones



0  
cm

1

2

3

4

5

6

7

8

9

10

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

**JONES & LETTICH**  
**Druggists**  
Cor. Fifth & Market Sts. ST. LOUIS, MO.

W. B. HARRIS & CO. ST. LOUIS, MO.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11737



0

1

2

3

4

5

6

7

8

9

10

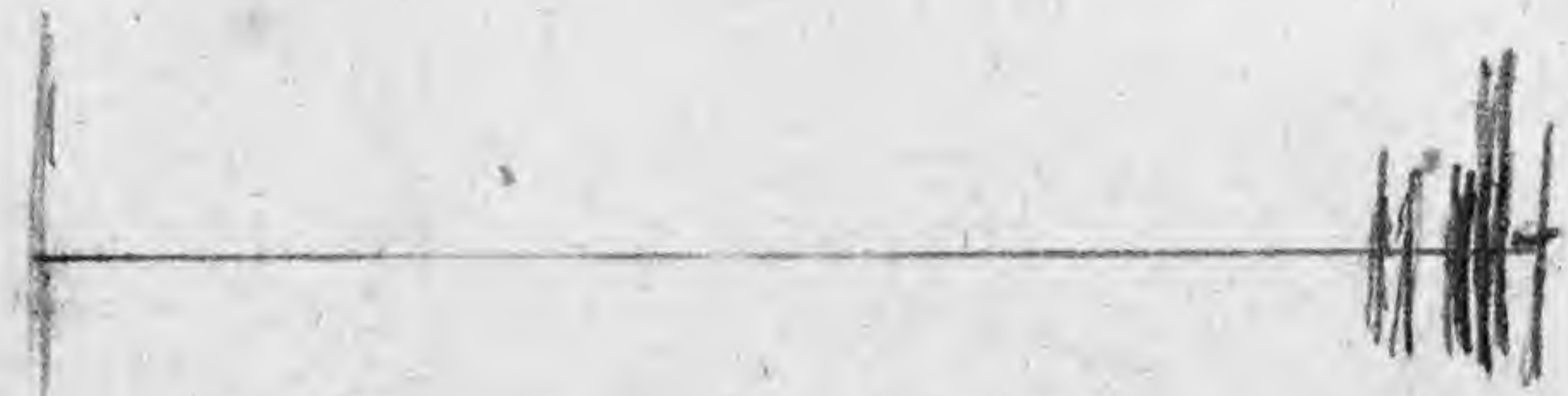
cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

Pollen size



$\frac{18-20.6 \text{ lin}}{415}$

0.043 - 0.048

mostly 0.046 - 0.047

Male spike's axis 2 - 2½ inches long  
10-11 lines thick  
annets 5-6 lines long

" *Pinus mentiana* "

H. D. Mirron 25 May  
1864

(late spring) post-flowering  
plant had suffered during the  
late cold winter, upper  
part of bushy young tree killed  
flowers on lower branches  
about 2 feet above ground



" *Pinus torbomant* "  
*Cedrus libani*

killed  
nearly so

Pollen size May 7  
1865

nearly passed flowering

$\frac{18-21}{415} = 0.044 - 0.051$   
Lin



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

CHEMIST



ALEX. LEITCH,  
APOTHECARY & CHEMIST,  
Cor. 4th and Olive Sts., St. Louis.



ALL THE NEW REMEDIES  
CONSTANTLY ON HAND

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11738



0 1 2 3 4 5 6 7 8 9 10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN

X415

*Pinus maritima* Lamark

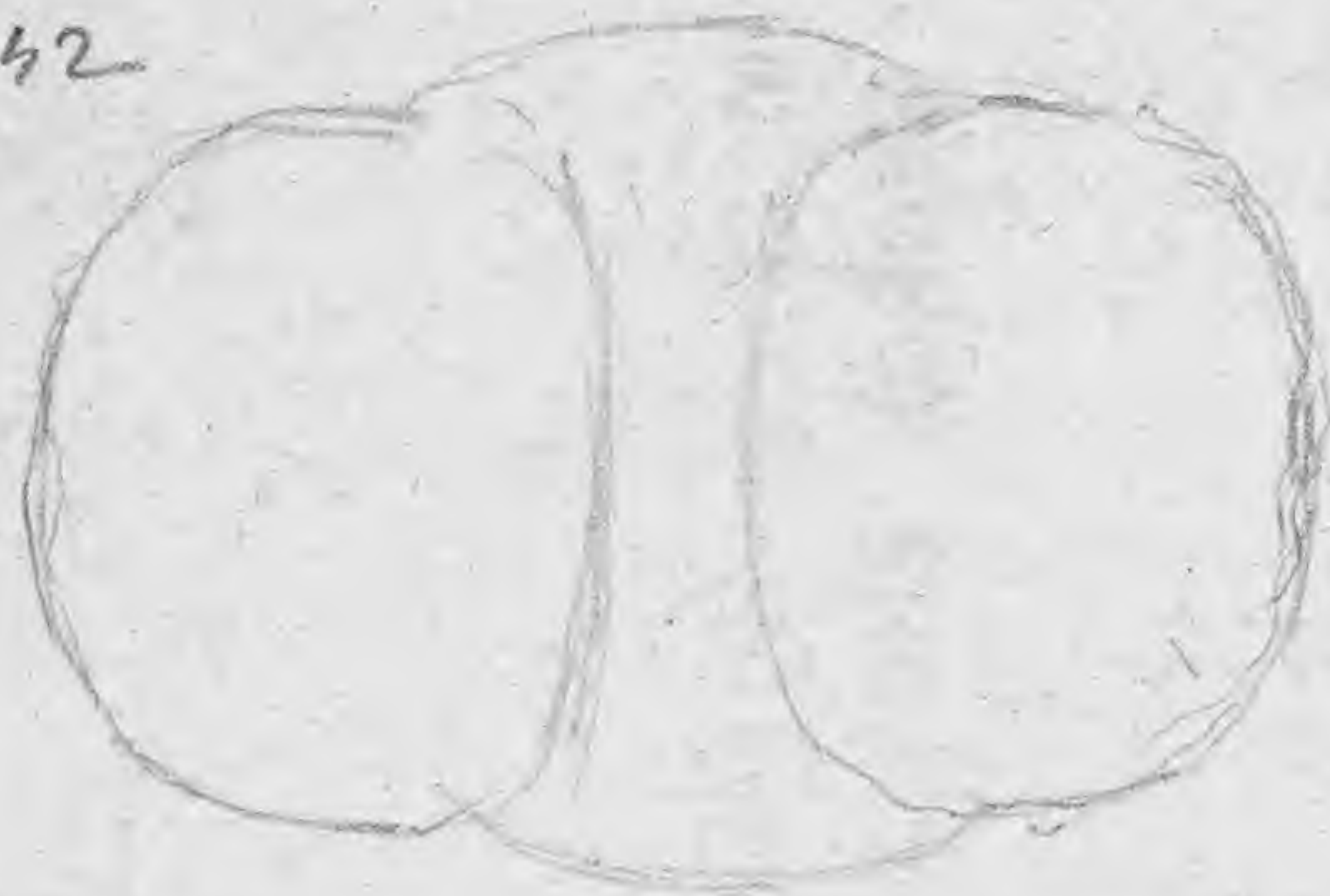
Bois de Boulogne

= *P. Pinaster* Ait

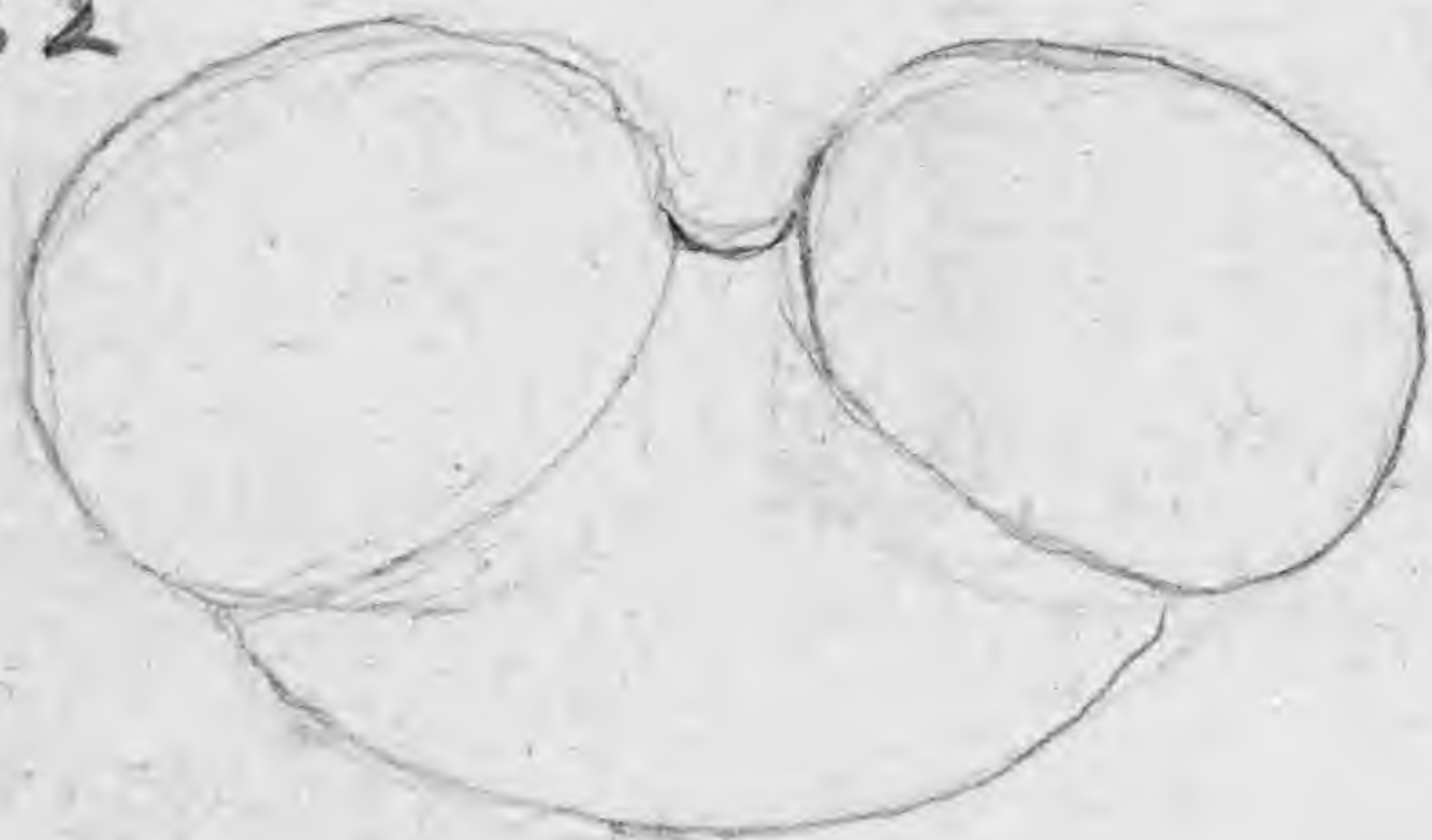
Sept 29. 1863

May 1832

0.042



0.042



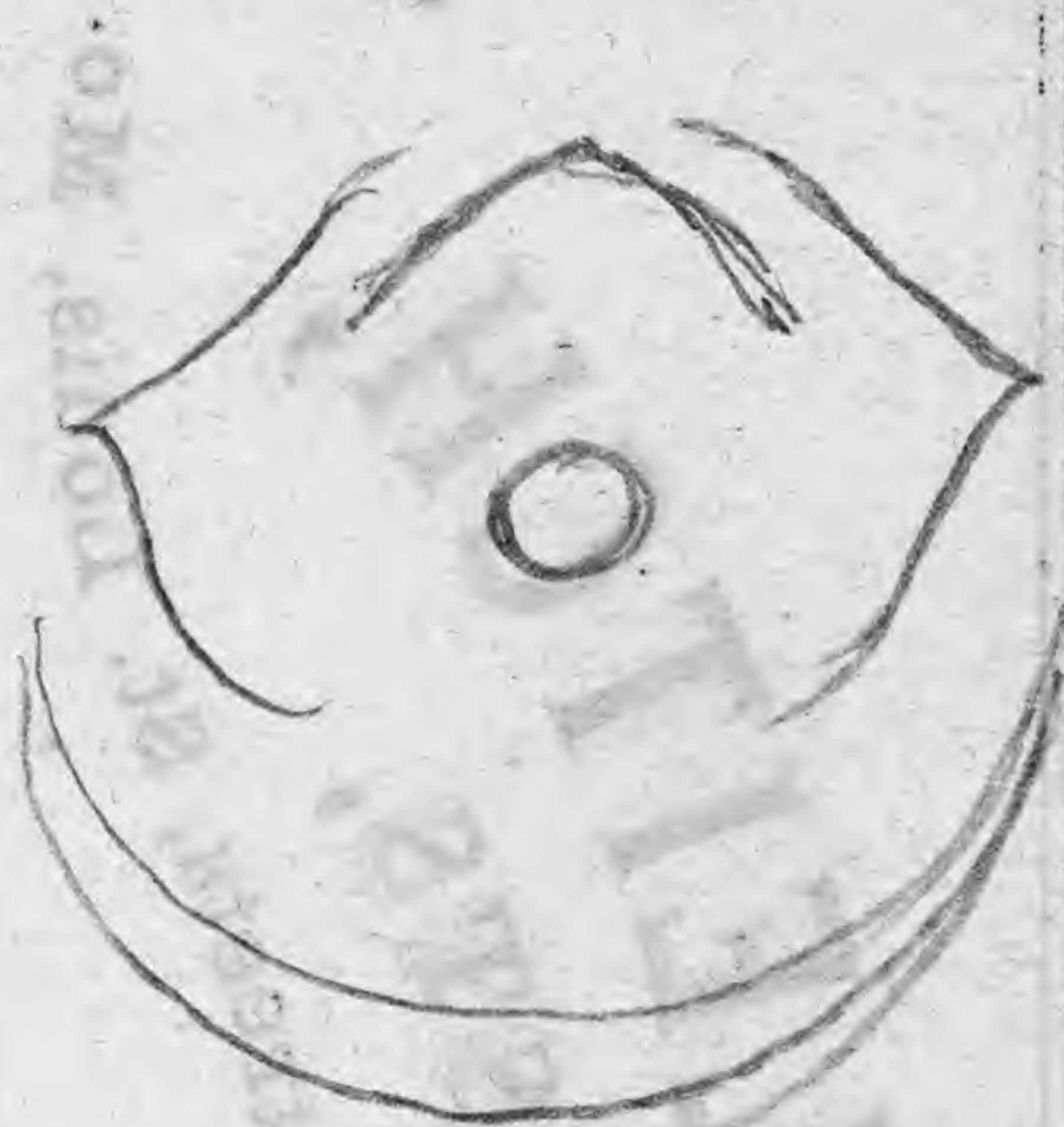
X4



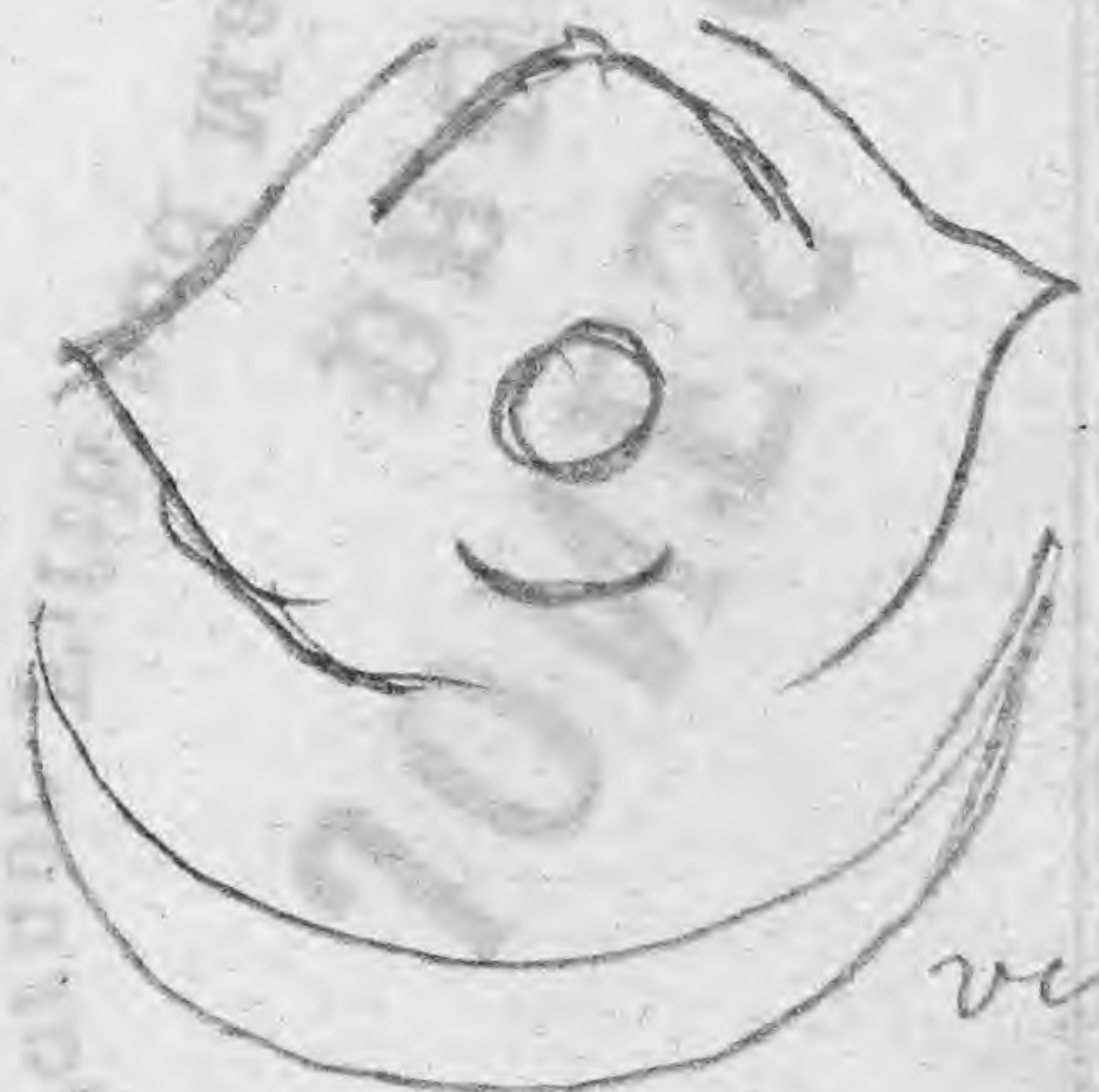
annul stipitate



0.036-0.040-0.043



usual case



very rare

seen once



0  
cm

1

2

3

4

5

6

7

8

9

10

copyright reserved



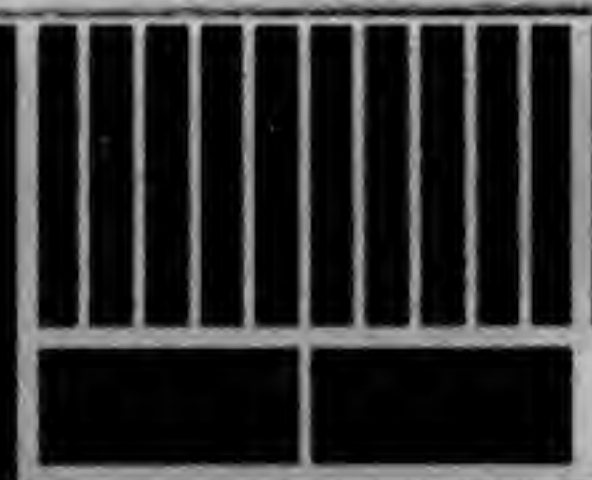
MISSOURI  
BOTANICAL  
GARDEN

**JONES & LEITCH,**  
**PRINTERS,**

Corner Fifth and Market Streets, St. Louis, Mo.

MISSOURI BOTANICAL GARDEN  
GEORGE ENGELMANN PAPERS

11739



0

1

2

3

4

5

6

7

8

9

10

cm

copyright reserved



MISSOURI  
BOTANICAL  
GARDEN